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THE INTRADERMAL TUBERCULIN TEST IN THE PIG

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In the literature consulted there are few reports dealing with the intradermal tuberculin test as applied to the pig. Zschokke (1938) found that of 266 pigs tested by this method, 90 per cent. of those found tuberculous at slaughter reacted to the test. Burrow (1939), in a series of 500 pigs tested with both avian and mammalian tuberculins, found reactions only to the mammalian tuberculin. This author read the test at 48 hours. Hankin (1937) recorded the reaction at 72 hours, while Barrett (1933) used the fold of skin at the flank as the test site and read the test at 48 hours. Rich (1927) tested 217 pigs with avian and mammalian tuberculins and found 37 positive reactions. Of these, 31 reacted to the avian tuberculin, five to both avian and mammalian and one to mammalian only.

The pig is unique among domestic animals in being susceptible to all three types (human, bovine and avian) of *Mycobacterium tuberculosis*. Generally speaking, the bovine type of infection is capable of producing in swine a more severe and a more widely disseminated disease than either of the other types. Avian tuberculosis in the pig is mainly a localised disease of the lymph nodes, though generalisation may occur to involve liver, spleen and lungs. Generalised avian infection in the pig has been recorded by several authors, *e.g.*, Christiansen (1931), Griffith (1928) and Feldman (1938). Orally, pigs are less susceptible to human strains and natural infection with human organisms usually results in a local adenitis only. Butler & Marsh (1927), for example, investigated tuberculosis in a herd of pigs fed swill from a tuberculosis sanatorium. They found 30 per cent. infected with the human type tuberculosis. In all cases the infection was found in the lymph nodes only. Human type infection has also been reported in the pig by Cobbett (1922), Holth (1935) and Topacio (1933).

An opportunity was afforded at this laboratory of carrying out the intradermal tuberculin test in groups of pigs infected experimentally with avian and/or bovine strains of *M. tuberculosis*. The experiences gained in these experimental infections together with the results obtained from the testing and subsequent slaughter of groups of pigs at Belfast Abattoir are incorporated in this paper.

Restraint.—If the pigs are crowded into a small pen it is usually possible to carry out the intradermal test in the majority of pigs without additional restraint. For the very fractious animal it may be necessary to snare it by means of a rope looped over the snout. A stout handled twitch is very useful for this purpose. Undue handling or holding by the ears is undesirable as the resultant trauma may interfere with the interpretation of any subsequent skin reaction.

Site.—The fold of skin at the anterior border of the ear is the site of choice. The tuberculin may be injected about halfway along this border or at the base of the ear pinna itself. In the experimental work other sites have been used, for example, the fold of skin at the flank, the fold of skin at the base of the tail or the skin of the abdomen lateral to the mammary nipples. While satisfactory reactions can be induced at all these sites the ear site is preferred for routine work as reactions here are readily seen and assessed, especially when pigs are crowded in a pen for observation.

Tuberculin.—P.P.D. tuberculin, supplied by the Veterinary Laboratory, Weybridge, was used. The mammalian tuberculin contained 1·5 mg. tuberculoprotein per ml. and the avian tuberculin contained 0·4 mg. tuberculoprotein per ml. Various dilutions of the two products were used from time to time and in all cases the dilutions were made with saline. The test dose was 0·1 ml.

Sensitisation.—In the experimental work sensitisation was induced in most cases by the intraperitoneal inoculation of 0·5 ml. of a suspension of organisms cultured on Dorset's egg medium and standardised to between Numbers 1 and 2 on the Brown opacity scale. In a few instances a suspension of material from a tuberculous gland was used. By this method a measure of sensitivity may be apparent in three weeks and is usually marked at six to eight weeks after inoculation. Pigs tolerate this method of infection very well and in one series of 57 pigs infected in this manner with bovine type organisms at four to six weeks of age only two developed clinical evidence of tuberculosis five to six months after infection.

The Reaction.—In the recently infected animal a high degree of sensitivity can be induced to either avian or bovine infection. In such animals reactions can be invoked by very dilute tuberculins; for example, reactions up to 9 mm. have been produced in a bovine sensitised pig using standard mammalian tuberculin diluted 100,000 times, while a similar dilution of the avian tuberculin in an avian sensitised pig produced a reaction of 4·5 mm. However, there is evidence that sensitivity in the pig, especially that due to avian type infection, tends to wane fairly rapidly. As judged by negative cultural and biological tests many avian infections have been overcome 112 days after infection. The persistence of bovine infection, too, is very variable, for, while this type of infection tends to be more progressive and sensitivity more prolonged than in the case of avian type infection, many of the experimental bovine type infections have negative skin tests at 190 days after infection and, though lesions were found at *post-mortem* examination, these were biologically and culturally negative (Luke, 1951).

Where reactions are large, *i.e.*, 15 mm. or more in extent, they often develop an intense purple colour at the centre of the swelling and superficial necrosis usually follows. The reaction can be read at either 24 or 48 hours. Some of the reactions are at their peak about 24 hours and are regressing at 48 hours, whereas in others the 24-hour reading is less than that at 48 hours. However,

even in these cases the 24-hour reading is unequivocally positive. In all the experimental infections a measure of sensitivity did seem to persist beyond the period of viability of the infecting organisms.

Interpretation of the Reaction.—In view of the ability of the pig to overcome active tuberculosis, testing results are likely to be influenced by the healing of the lesions and complete loss of tuberculin sensitivity is to be expected in those cases where the natural defensive mechanisms of the host have successfully overcome the invading bacillus (Luke, 1951). This aspect was examined during testing experiments on groups of old sows (Luke, 1952). In general the sensitivity shown by such pigs is low and of 39 sows classified as reactors 34 had reactions of 10 mm. or under. In pigs recently infected, however, the skin response is usually clear cut and in these cases there is no difficulty in assessing positive reactions. However, in the low sensitivities shown by some of the long-standing infections likely to be encountered in older pigs difficulty may be experienced in classifying the reactions. Attention already has been drawn to this aspect of the problem and the difficulties of establishing a satisfactory criterion of a positive reaction in the pig have been discussed in a previous paper (Luke, 1952). The importance and extent of non-specific sensitivities in the pig have not yet been adequately investigated. There is evidence that "no lesion reactors" occur. For example, out of 100 sows tested 17 gave tuberculin reactions of 2 mm. or more without showing any macroscopic lesions of tuberculosis at *post-mortem* examination. In addition, eight sows showed lesions but no skin reaction. No viable organisms were found, however, in this latter group. The anomalous results render correlation between the skin reaction and *post-mortem* results extremely difficult.

It has already been suggested that in routine field testing a rise of 5 mm. or more in skin thickness be regarded as a positive reaction and that reactions up to 4·5 mm. be regarded as doubtful. The creation of such a "doubtful" category would avoid the condemnation of many *post-mortem* negative pigs giving a reaction within this range. Doubtful reactions could be retested in, say, six to eight weeks, when if infection is active and skin sensitivity is rising, the reaction at this second test should be unequivocal, whereas if the second test result is less than the first, such an animal could be retained—for, even though lesions of tuberculosis may be present, it is unlikely that these would contain viable bacteria.

Stormont Test Technique in the Pig.—The possible application of the Stormont testing technique to the pig was also studied. This test was devised by Kerr, Lamont & McGirr (1946) for the bovine and has been accepted as the official test under the Attested Herds Scheme in Northern Ireland. These authors found that a site injected with tuberculin exhibited an enhanced sensitivity to a second injection of tuberculin. This enhanced response could be elicited six to nine days after the first injection of tuberculin and, on the basis of these observations, they proposed a testing technique called the Stormont Test for the detection of tuberculous sensitivity in the bovine. In this test the original test site was re-injected on the seventh day. The criterion of a positive reaction was the increase in the skin measurement between that on the seventh day and that taken 24 hours later, *i.e.*, on the eighth day. An increase of 5 mm. or more is taken as a positive reaction. It is of interest to note that the Stormont test develops more quickly than the true tuberculin type of reaction and it is at its maximum within 24 hours.

A series of observations was made on sensitised pigs, on the effect of a second injection of tuberculin at the test site, the two injections being carried out at varying time intervals. In all cases the Stormont test response was compared with a single intradermal test carried out at a different site at the time of the second Stormont test injection. The results may be summarised briefly as follows: Under eight days the response to the second injection is often less than that at the control site. This desensitisation at the site of an earlier injection of tuberculin was local, as the response to a control injection at a new site was comparable to that elicited by the first Stormont injection. At a 10-day interval between injections some pigs showed an enhanced response to the Stormont technique, and at 28 days in some cases also the Stormont reaction was larger than the single intradermal test. The development of some of these reactions is summarised in Table I.

TABLE I
STORMONT TESTING TECHNIQUE IN THE PIG

Skin reaction at hours	Pig No. 77		Pig No. 78		Pig No. 79		Pig No. 66		Pig No. 61	
	•10 days		•10 days		•10 days		•28 days		•24 days	
	S.	C.	S.	C.	S.	C.	S.	C.	S.	C.
0	8	3·5	9	5	7·5	4·5	9	4·5	5·5	5
2	11·5	3·5	12	5	9·5	4·5	15	5	13·5	7
4	14·5	4·5	16·5	6	12·5	6	18	6	12·5	10
6	16	5	28·5	6·5	15·5	7·5	23	10	13	13·5
8	20	6	18·5	7	18	8	27	10·5	12·5	13
10	25	9	20	9	20	9·5	30	12	13·5	13
22	31	22	21	18	28	14	39	20	15	17·5
26	29	21	20·5	21	21	19	36	19	17	20
48	19	16	18	16	19	17	21	15	17	21

S. = Stormont test reaction in mm.
C. = control reaction in mm.
• Interval between tuberculin injections.

In pigs Nos. 77, 79 and 66 the Stormont test site shows a well-marked increase over the control reaction. In pig No. 78 the overall increase was only slightly in favour of the Stormont test, whereas in Z.61 no enhanced response was seen. The characteristic feature of the Stormont test, *viz.*, the quick development of the reaction as compared with the typical delayed tuberculin reaction, was seen in nearly all the tests at varying intervals between injections even though at the Stormont site the skin reaction was no greater than that at the control site. In view of this lack of uniformity it is felt that the Stormont test is not likely to be of practical use in the detection of the tuberculous pig.

Tuberculoprotein as a Possible Sensitising Agent.—Various attempts have been made by different workers to test the ability of tuberculoprotein to act as a sensitising agent. Seibert (1932) using rabbits and guinea-pigs and Boquet *et al.* (1937) in guinea-pigs did set up a sensitivity but in no case was this sensitivity of the true delayed tuberculin type. The question is of some importance, particularly where repeated testing is being carried out. Should tuberculoprotein in amounts comparable to those used in routine testing be capable of inducing the delayed type of sensitivity, the assessment of testing results in certain circumstances might be seriously jeopardised. Attempts were made to sensitise pigs with tuberculoprotein in amounts up to 30 mg. The 30 mg. is equivalent to 20 ml. of Weybridge mammalian tuberculin retest strength. All the results were uniformly negative.

Use of Mixed Avian and Mammalian Tuberculins.—Under field conditions there are occasions when it is

necessary to find out the tubercular status of a pig without particular reference to the type of infection present. Owing to difficulties in restraining adult pigs satisfactorily one may succeed in getting one injection adequately placed yet the second injection required for a comparative test often presents considerable difficulty. Some observations were therefore made on experimentally infected pigs using a mixed tuberculin. This was made up of equal parts of avian and mammalian tuberculins. This mixed tuberculin was injected into the skin of the abdomen and at the same time a comparative test was carried out at the base of the right and left ears. Mammalian, avian and dual sensitised pigs were used. The results in one group of 12 pigs are given in Table II, and these indicate that the use of a mixed tuberculin is a feasible method of detecting a tuberculous sensitivity in the pig and could be used where information as to the type of sensitivity present is not required.

TABLE II
COMPARABLE SKIN REACTIONS USING AVIAN, MAMMALIAN AND MIXED TUBERCULINS

No.	Type of sensitivity	Increase in skin measurements in mm.		
		Mamm. site	Avian site	Mixed site
		Right ear	Left ear	Belly
Z.80	Dual	15	11	15
Z.83	Dual	16	8	13·5
Z.81	Dual	10·5	9	11
Z.82	Dual	19	16	18
Z.89	Mamm.	21	3·5	12
Z.88	Mamm.	20	6·5	15
Z.87	Mamm.	23	7·5	14·5
Z.79	Dual	11	4	12
Z.78	Dual	11·5	6	12
Z.77	Dual	17	12·5	24
Z.85	Avian	7·5	20	18
Z.86	Avian	9·0	17·5	10

Specificity of Avian and Mammalian Tuberculins.—The specificity of the mammalian and avian tuberculins was examined in avian sensitised, bovine sensitised and in dual sensitised pigs. In 28 comparative tests carried out in avian sensitised pigs the mammalian reaction averaged 4·97 mm. and the avian reaction 11·95 mm. In 29 comparative tests on bovine type infections the mammalian reaction averaged 16·08 mm. and the avian 5·05. In 45 tests on dual sensitised pigs, the mammalian reaction averaged 15·8 mm. whereas the avian reaction average was 7·6. These results suggest that the sensitivity induced by bovine bacilli tends on the average to be of a higher order than that due to the avian infection. As indicated by the heterologous reactions in the above tests, *viz.*, 4·97 and 5·05 mm., there is little difference to be observed in the specificity of the two tuberculins. The reactions to mammalian tuberculin in the bovine sensitised and dual sensitised groups, 16·08 and 15·8 mm. respectively, are comparable. The reaction to the avian tuberculin in the avian sensitised group was 11·95 mm., which is greater than that elicited by the avian tuberculin in the dual sensitised group, *viz.*, 7·6 mm. This may be due to a depressing effect on the avian sensitivity by the coincidental bovine infection.

SUMMARY

The susceptibility of the pig to the various types of tuberculosis is discussed. In recent infections a high degree of skin sensitivity is present. The intradermal skin reaction to tuberculin is at its maximum in 24 to 48 hours. The degree of healing of the lesion in many cases has a direct influence on the intensity of the reaction as the pig showed a marked ability to overcome the experimentally-induced tuberculosis. Attention is drawn to the difficulty of correlating *post-mortem* findings and skin reactions in long-standing infections.

The application of the Stormont test in the diagnosis of tuberculosis in the pig was examined. Although the typical Stormont response was elicited at certain intervals between test injections it was not regularly produced. No evidence was found that tuberculoprotein could act as a sensitising agent.

The use of a mixed avian and mammalian tuberculin is suggested for the detection of tuberculous sensitivity where information as to the type of infection present is not required. The specificity of the avian and mammalian tuberculins in the pig is discussed.

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COMMONWEALTH BUREAU OF PASTURES AND FIELD CROPS

Nature reports that the Commonwealth Bureau of Pastures and Field Crops, which has been attached to the Welsh Plant Breeding Station, Aberystwyth, for the past 24 years, is being transferred to Hurley, Berkshire, where it will be attached to the new Grassland Research Station, of which Dr. Wm. Davies is Director. This Bureau, one of the 10 Commonwealth Agricultural Bureaux, was founded at Aberystwyth in 1929, its first Consultant Director being Professor (now Sir) George Stapledon. For the first 20 years of its existence the Bureau was in the charge of Dr. R. O. Whyte, who was succeeded as Director in 1949 by Mr. A. G. G. Hill, formerly Director of the East African Agricultural Research Institute, Amani. The Bureau issues the quarterly abstract journals *Herbage Abstracts* and *Field Crop Abstracts*, in addition to its other activities.

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Dr. J. O. Bekker, a veterinary surgeon, of Sandown, Johannesburg, has a method which, it is said, may double South Africa's meat production. So far back as 1928, Dr. Bekker conceived the idea of dosing animals with phosphate through their drinking water to overcome phosphorus deficiencies and he has now made this a practical proposition. He has devised a small cylindrical tank which drips a predetermined amount of monosodium phosphate solution into cattle drinking troughs. "I see phosphorus deficiency as the direct cause of the meat shortage," says Dr. Bekker, "and the meat shortage as the outstanding limiting factor in the industrial and mining development of South Africa. A return to stock farming is a great essential in saving the soil and I hope my method will do much in achieving this."—*Meat Trades Journal.*

THE REAPPEARANCE OF A POSSIBLE HEREDITARY SEMEN CHARACTERISTIC ASSOCIATED WITH DEFECTIVE REPRODUCTION IN THE FRIESIAN BREED

BY

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Some years ago, in the course of field assistance in the evaluation of male fertility, a series of young bulls of the Friesian breed had been examined showing abnormality of the sperm head, and in all cases associated with complete sterility.

Various workers have reported the existence of this defective galea capitis (Teunissen, 1946 ; Blom, 1948), and staining techniques (Blom, 1945) have been evolved to demonstrate the abnormality. In most cases so far recorded an extended pedigree study included some association with certain specific lines of breeding, and the possibility of an hereditary factor could not be ruled out.

Hancock (1949), in a study of seven bulls showing the specific morphological feature, was able to associate the finding with close blood relationships, and came to the conclusion that hereditary factors were at work.

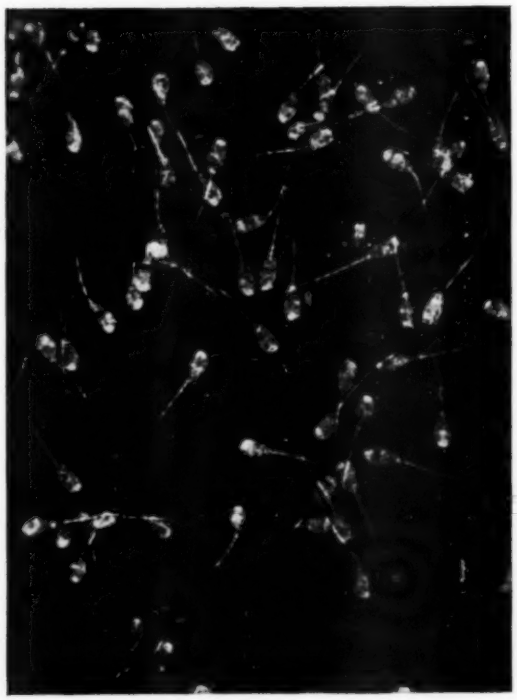
The writer now records two cases of young Friesian bulls made available for examination after periods of natural service when in both cases there was a history of complete sterility.

Bull (A)

This animal had been sold through an autumn bull sale at the age of 18 months and returned, in dispute to its breeder, with a history that at the onset it had been slow and inactive but later served six cows and six heifers ; all of them, however, returned, subsequently holding to the older stock bull on the farm. Semen samples were collected from the bull by the artificial vagina and normal quantities of highly dense motile semen were obtained—the colour, however, being of a greenish tinge, a pigmentation met with on occasions in normal fertile samples.

Routine negrosin eosin smears were made on the farm as well as Indian ink smears, and upon close microscopical examination of the former some 80 per cent. of spermatozoa heads showed a refractile unstained or lightly stained area situated slightly to the side of the anterior pole of the head, while in the Indian ink preparation 90 per cent. of heads were affected.

Semen sample negrosin and eosin x 600



Semen sample Indian ink x 600

Samples stored at 40° C. in the egg yolk citrate buffer gave good motility ratings for up to seven days.

It should be recorded that neither testis, epididymis or accessory glands showed detectable abnormality at the time of examination.

Bull (B)

This animal, at the time of examination, was 14 months of age and had been purchased through an autumn show and sale as an untried bull.

During a period of two months 11 cows and heifers had been put to the bull and all with one exception had returned at a normal 21-day cycle. The cow that had not been observed on heat was later checked for pregnancy and found to be empty.

Service behaviour was good at the time of examination and quantities of 2·5 to 3 c.c. of high density motile semen were obtained when collected by the artificial vagina. These samples also had a slight greenish tinge and contained 70 per cent. of sperm showing defective polar caps.

Long-term storage in egg yolk citrate buffer was satisfactory up to eight days.

A careful examination of testis and accessory glands did not indicate any abnormality.

Summary

The writer considers it of some interest to publish the recent findings on two young almost unrelated Friesian bulls, in view of the possibility of the semen characteristic described being associated in this country and in Holland with certain lines not very closely connected.

Acknowledgments.—Thanks are due to Mr. G. Williams for furnishing details on Bull (B), and also to Messrs. Munro and Frappell for their co-operation.

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PROGRESS IN CANCER RESEARCH

Lord Horder, Chairman of the Grand Council of the British Empire Cancer Campaign, presiding at the annual meeting held in London recently, read a message from the Duke of Gloucester, President of the Campaign, in which he said he was more than satisfied with what had been done in the past year as evidenced by the 30th annual report, which was adopted at the meeting.

In the course of an address, Professor A. Haddow referred to the confident belief held by present-day research workers that effective control of cancer and its prevention would ultimately be achieved by purely chemical means. Knowledge, he said, had now been accumulated of some hundreds of pure chemical agents of different types which were all endowed with a remarkable capacity to cause cancer. Until recent years little or nothing was known either of their mode of action or even of the site within the cell at which it took place. Lately there had developed a great shift of emphasis and increased attention had been given to the detailed biochemical mechanism of action, in the confident belief that full understanding of this remarkable process by which normal cells were converted and transformed into cancer cells would surely lead to discovery of the means by which the process might be regulated, controlled, or even prevented or reversed. In the case of certain cancer cells they had now recognised for the first time the imprint left upon them by the chemical agents which induced their appearance. The field of interest was now being widely extended to include not merely the carcinogenic agents themselves but also the giant molecules within the cell with which it was believed they combined.

New Studies

This was leading to studies of the colloidal and molecular organisation of the chromosomes themselves and of their constituent fibrous molecules. The chromosomes and their component molecules were filaments with the almost magical quality of reproducing their like, and it was this process which it was believed might be interrupted by the cancer-producing agent. They were still not finally sure, but it appeared that the cancer cell was derived from the normal cell through the loss of ferment systems normally responsible for growth regulation. He would not labour the great theoretical importance of such a conclusion or its practical implications. While much remained to be done he would hazard the prediction that sooner or later, and depending on the efforts of research workers, we should see in the chemotherapy of cancer something entirely new—a kind of substitution therapy by which the cancer cell would be controlled from without, by the same kind of chemical means in virtue of which the normal cell automatically regulated itself from within.

They could not penetrate the future, but the prospects had sensibly changed and cancer prevention, which some years ago seemed utterly beyond their hopes, might yet prove to be within their ultimate powers.

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A record top price of 620 guineas was paid for a ram lamb from Colonel Sir Robert Gooch, of Benacre Estate Office, Wrentham, Beccles, at the Suffolk Sheep Society's annual special sale at Ipswich on August 6th. A Royal Show champion, it had been awarded the Venning Challenge Cup for the best ram lamb on the previous day. Mr. A. Turnbull, of Perth, Scotland, was the buyer.

INTRAVENOUS ANAESTHESIA BY THE USE OF KEMITHAL SODIUM (I.C.I.)

BY

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Kemithal is chemically 5-allyl-5- (Δ^2 Cyclohexenyl)-2-thiobarbituric acid. Carrington & Raventos (1946) reported that this drug was half as potent in mice as thiopental sodium and less depressant to respiration, while the duration of its action was about the same. Mackintosh & Scott (1946) used 0·5 to 6·3 grammes intravenously in 400 patients to induce anaesthesia. Gordon & Gibbons (1946) obtained smooth and rapid induction of anaesthesia using 5 to 10 per cent. solution of kemithal sodium intravenously, in intermittent doses, prior to cyclopropane anaesthesia. Recovery was usually complete within 30 to 40 minutes. In 208 human patients subjected to anaesthesia, where kemithal was used as the principal anaesthetic, 34 developed post-operative complications, chief of which was vomition. This was attributed to other factors. Halton in 1946 found that kemithal was superior to other barbiturates. Titchen and associates (1949) found that kemithal sodium was preferable to sodium pentothal as an intravenous anaesthetic in sheep. Its action was shorter and respiratory depression less. Induction of anaesthesia was rapid and smooth.

Kemithal has been widely used at the Veterinary Hospital, Peradeniya, Ceylon, as an intravenous anaesthetic of choice in major operations on dogs. The authors have used it in over 130 cases and the following advantages have been noted:—

1. No period of excitement prior to anaesthesia.
2. The anaesthesia is complete in the course of one to three minutes, which is the duration of the injection.
3. The anaesthetic may be given much more rapidly than nembutal.
4. The degree and period of anaesthesia may be varied from 15 to 45 minutes by varying the dosage.
5. Recovery after anaesthesia is generally more rapid than after other barbiturates.
6. There is very little excitement during or after recovery.
7. The therapeutic index appears to be higher than 1·5.

Dosage and Administration

Kemithal sodium is administered as a 10 per cent. aqueous solution (or as a 5 per cent. aqueous solution in puppies and small breeds of dogs), into the recurrent tarsal vein. The injection rate is 1 c.c. per half minute and when the full dose is administered the corneal reflex disappears, there is an abrupt halt in respiration for several seconds and thereafter the respirations become deep and regular.

Dosage.—The following dosage of the anaesthetic will produce anaesthesia lasting about 20 minutes:—

Below 10 lb.—$\frac{1}{3}$ grain per lb. bodyweight.
From 10 to 30 lb.—$\frac{1}{2}$ to $\frac{1}{3}$ grain per lb. b.w.

Experiment number	Breed	Age	Weight	Respiration		Pulse		Corneal reflex and pupil at the end of injection	Period of excitement	Quantity given in grains	Time for induction of anaesthesia	Period of anaesthesia	Period of narcosis	Grains per lb.	Remarks
			Lb.	Before	After	Before	After				Min.	Min.	Min.		
1	C.B.	1 year	35	120	48	125	136	Absent. Pupil partly contracted	Nil	9	2	25	20	0·26	
2	Spaniel	1½ years	24	35	24	136	168	„	„	9	2½	35	30	0·38	Anaesthesia maintained for 20 min. more by an additional 4·5 grains
3	Spaniel	3 „	28	32	7	115	150	„	„	9	2½	30	20	0·32	
4	C.B.	13 „	36	32	18	80	96	„	„	11·25	3	55	30	0·31	
5	Crossed Alsatian	3 „	42	42	18	75	103	„	„	11·5	2½	30	20	0·27	
6	Crossed Retriever	1½ „	48	60	24	80	120	„	„	12	2½	25	30	0·25	Anaesthesia maintained for 20 min. more by an additional 4·5 grains
7	C.B.	3 months	10	32	10	120	150	„	„	3·75	2	8	6	0·38	Given as 5 per cent. solution
8	„	3 „	10	42	20	120	170	„	„	5·5	2½	32	8	0·55	„ 5 „ „
9	„	3 „	8	72	20	120	140	„	„	4·5	2	20	5	0·56	„ 5 „ „
10	„	2 „	6	80	30	130	160	„	„	3·5	1½	1	6	0·58	Anaesthesia maintained for 20 min. more by an additional 2 grains
11	Spaniel	6 „	20	62	40	180	210	„	„	7·5	2	30	30	0·38	
12	D'und	2 „	22	28	16	120	160	„	„	6	1	30	20	0·27	
13	„	4 „	12	70	30	115	140	„	„	5·5	2	25	20	0·46	
14	Alsatian	3 years	56	55	20	80	110	„	„	15	3	40	90	0·27	
15	„	6 „	59	40	15	65	90	„	„	15	3	50	45	0·25	
16	C.B.	3 months	8	60	18	120	180	Pupil pinpointed	„	6	2	65	90	0·75	Given as 5 per cent. solution
17	„	14 years	42	40	12	70	180	„	„	18	3	80	About 2 hours	0·43	Given one and a half times computed dose
18	„	8 „	38	60	19	70	190	Reflex absent. Pupil partly contracted	„	18	3	50	„	0·47	Given one and a half times computed dose
19	Boxer	4 „	62	60	Very irregular	70	132	„	Slight excitement and salivation	13·5	—	Only narcosis	Narcosis over in 20 min.	0·22	Anaesthesia stopped at the onset of excitement
20	Alsatian	3 „	72	45	20	60	95	„	Nil	15	3	Min. 33	Min. 60	0·21	
21	C.B.	1½ months	9	60	18	90	120	„	„	7	2	40	90	0·78	
22	Crossed calf	4 „	72	18	14	—	—	Not observed	„	15	4	30	60	0·21	Anaesthesia maintained for 25 min. more by an additional 6 grains
23	„	6 „	90	32	14	60	78	„	„	19·5	4½	40	50	0·22	
24	Goat	3 years	92	30	12	48	80	„	„	15	4	3	Narcosis for 30 min.	0·16	
25	Kid	3 months	38	48	12	72	90			7·5	24	30	Min. 40	0·27	

From 30 to 50 lb.—½ to ¼ grain per lb. b.w.
Over 50 lb.—¼ to 1/5 grain per lb. b.w.

Anaesthesia may be maintained up to one and a half hours by injecting one-third the original dosage at subsequent intervals. The authors did not have the opportunity of recording many cases over 60 lb.

The table records a few of the experiments carried out at the Veterinary Hospital, Peradeniya, Ceylon, to determine the dosage of the drug and the nature of the anaesthesia. During deep anaesthesia the pupil is partly contracted and the pulse is accelerated, while the respirations are deep, regular and slow. There is no salivation, defaecation or urination. The visible mucous membranes are congested.

The authors selected two dogs brought for destruction and gave one and a half times the anaesthetic dose in the usual manner; both the animals recovered eventually after being under anaesthesia for about one and a half hours (*vide* table). Seven grains of kemithal were given to another puppy, weighing 9lb., intravenously as a 5 per cent. solution. The period of anaesthesia was 40 minutes, and the period of narcosis one and a half hours. The results indicate the low toxicity of the drug. The only untoward effect noted was in a Boxer weighing 62 lb., which on receiving 13·5 grains showed slight excitement and salivation. Anaesthesia was stopped at this point.

Coramine and camphor hasten recovery while metrazol is the probable chemical antidote.

The authors have also used kemithal very successfully on two calves, two kids and a goat. The dosage required and the period of anaesthesia are given in the table. Again the anaesthesia was very satisfactory and there was no excitement.

Conclusion

Kemithal seems to be a safe and efficient intravenous anaesthetic for dogs and possibly other species of small animals, to be used in operations lasting not more than one and a half hours. It is less toxic than other barbiturates and there is no pre-anaesthetic excitation while the period of post-anaesthetic narcosis is short. The toxic dose appears to be more than one and a half times the dose required to produce anaesthesia of short duration. It seems to be preferable to other barbiturates as an intravenous general anaesthetic. More experimental data will be necessary before the exact dosage is computed for the larger breeds of dogs and other species of smaller animals.

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ABSTRACTS

Syndrome Associated with Ingestion of Chemically "Improved" Flour*

An account is given of a syndrome characterised by eczema, mental disturbance and anorexia, in a patient described as an intelligent housewife. She developed a skin disorder in 1940, when 37 years of age, and has been under the constant supervision of both authors since 1947. The chronic eruption involved the face and neck and also the upper limbs symmetrically; it was subject to acute irregular exacerbation, and pruritus was troublesome during the acute phase. Despite active and varied treatment the condition smouldered until 1952, with occasional exacerbations.

During 1952 it became evident that the severity of the existing lesions increased when the patient came into contact with flour. It was clear, however, that external irritation by flour was not the cause, for there had been long periods without contact. Provision of a flour-free diet led to rapid and continuous improvement, and by June the skin was normal.

Thereafter the patient willingly co-operated in a series of experiments in which she was found to be able to tolerate bread made by an aeration process from chemically untreated flour. Consumption (unknown at the time to the patient) of bread made from flour treated either with agene or with chlorine dioxide led to the rapid reappearance of the skin disorder.

The authors pose the question: "Is this a rare case of allergy, or merely the first recognition of a common disease?"

[In an accompanying editorial on pp. 581–582 of the same issue, it is stated that the above question is clearly one that will have to be answered. It would be quite unjustifiable to conclude from a single case that flour treated with agene or chlorine dioxide is unsuitable for human consumption, but the demonstration of this reaction by chemically treated flour will nevertheless reinforce the arguments of those who oppose this and like practices. Work on the effects of agene on dogs and other species is reviewed, and it is suggested that all relevant information should be made public. The further question is put: "Is it in fact still demonstrably true that bread acceptable to the public cannot be made without exposing the flour to chemicals?"—*Abstractor.*]

A. N. W.

* **A Syndrome Associated with the Ingestion of Chemically "Improved" Flour.** Sheldon, G. C., & Allen, Y. *Lancet.* **264.** 577-582.

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Mechanical Stimulation of Reflex Salivation in Sheep and Goats*

It was observed that the rumen contents of sheep became more watery during several hours after feeding hay even though no access to water was allowed. For this reason the salivary responses to mechanical and chemical stimuli in the rumen were investigated. Stimulation of the central end of the cut cervical vagus produced an increase in the secretion of parotid saliva. Stimulation of the throat produced a small reflex secretion and stimulation of the cardiac region produced a four- to five-fold response. The latter response was abolished by section of the vagi. These results provide positive evidence of a salivary reflex, of which the sensory endings apparently lie in the region of the cardia and the sensory afferent fibres run in the vagi. A. T. P.

* **Reflex Salivation in Sheep and Goats Initiated by Mechanical Stimulation of the Cardiac Area of the Fore Stomachs.** Clark, R., & Weiss, K. E. (1952). *J. S. Afr. vet. med. Ass.* **23.** 163–165.

THE XVTH INTERNATIONAL VETERINARY CONGRESS

[From Our Own Correspondent]

(*Continued from page* 528)

Informal Reception in the City Hall

During the week-end, August 8th to 9th, delegates from all parts of the world had been gathering in Stockholm for the opening of the XVth International Veterinary Congress. The Concert Hall, an imposing building in the centre of Stockholm, was the main centre for the Congress and during Sunday the 9th delegates were arriving there to register at the Congress Bureau and obtain their Congress papers. Here we met many old friends.

The first function of the Congress was the unofficial reception held in the City Hall on Sunday evening, and although it preceded the official opening of the Congress on Monday morning, it was, for many of us, the real opening to the great gathering.

Passing through the massive gateway we entered the great open courtyard and found ourselves amongst an animated crowd of veterinarians and their wives. It was a lovely evening and most of us had spent the day having a first look at the beauties of Stockholm, but here in the City Hall we had the finest possible setting for this great and friendly gathering. The Stockholm City Hall must surely be one of the most beautiful in the world and those of us who are going to the banquet on Tuesday evening are looking forward with keen anticipation to the pleasure of exploring it once again. The hall was built between 1911 and 1923 but it is not a modern building in appearance; it has been modelled on the style of ancient Swedish architecture which bears trace of Moorish influence. From the outside it is a magnificent building with a splendid brick tower some 300 ft. high and surmounted by the three golden crowns of Sweden. Seen at night the top of the tower is floodlit and the three crowns seem to hover in the cool night air watching over this great city—the "Venice of the North" as it has been called.

The City Hall is beautifully situated (unlike the Concert Hall whose setting is spoiled by the great sprawling flower and fruit market) and stands in a prominent position overlooking the calm waters of Riddarfjäden.

After spending a few minutes wandering about the courtyard and meeting old friends and listening, it seemed, to all the languages of the earth, we passed into the great Blue Room. This is a vast and beautifully proportioned hall lined with red brick and floored with marble, lit by great windows just under a lofty roof. Here, moving about amongst the tables set out with refreshments, we chatted to our friends, renewed old acquaintance, or listened to the music of the orchestra playing on a dais at one end of the hall. Presently we went up the great staircase which led from one end of the hall and brought us on to the great gallery looking down over the Blue Room. From here we passed into the Gold Room, floored with marble and its walls covered with wonderful mosaics depicting various incidents in the history of Sweden. Hence we were allowed to wander at will through the galleries and antechambers, libraries and council chambers and everything was magnificent. Description is difficult, but the writer remembers a long gallery with a row of black granite pillars along one side, some beautiful tapestries, and some fine mural paintings depicting the building of the hall. The whole building is fantastic and quite unlike anything that he has ever seen, but it is crammed with beauty. One thing only seemed to jar. In this modern age of air travel our hosts had kindly asked us to wear ordinary clothes for all functions—limitations of weight of baggage make evening clothes a difficulty to travellers from other parts of the world. This was inescapable but we couldn't help thinking as we looked over the gallery at the great throng in the hall below, that this was an occasion for beautiful dresses and gleaming white shirt-fronts. Perhaps, indeed, since this was a building of inspired fantasy, we could people it with distinguished men dressed in trunk hose, slashed doublet and ruff—not, however, the best of costumes for the safe delivery of a calf!

Stockholm City Hall.

Stockholm is a beautiful city and her architects have poured their very souls into the creation of a fitting setting for the Councils of the City Elders. As a hall for the entertainment of the city's guests the City Hall has not, of course, the history of the Guildhall, but in quite a different style it has a grandeur and a beauty which will endure for centuries.

Leaving it, we felt that this XVth International Congress had had an auspicious start. Honour had been done to veterinary science by our Swedish hosts. Let us hope that the Congress will be profitable, not only for the advancement of knowledge, but for its contribution to the spirit of co-operation and harmony between the nations.

. . . . .

THE OPENING SESSION

There was a very large gathering present for the opening session held in the Great Concert Hall of Stockholm, on Monday, August 10th. Shortly after 9 o'clock the officers of the Congress, members of the Organising Committee and the Honorary Presidents and Vice-Presidents-elect filled onto the platform and were given a spontaneous welcome by the delegates who packed the large hall. The proceedings opened with Aug. Söderman's Swedish Festival Overture, beautifully played by a small chamber orchestra from the Swedish Broadcasting Corporation.

Then followed a short address of welcome by Mr. Axel Alegren, President of the Organising Committee. Mr. Alegren, speaking in French, offered a hearty welcome to all the assembled delegates and expressed the hope that the Congress would bring about a lively interchange of views and be of lasting benefit to veterinary science. He said that it was a great honour for Sweden to welcome so many veterinarians from so many parts of the world and promised that he and his colleagues would do their utmost to ensure that the delegates could obtain all possible information about the Swedish Veterinary Organisation. Speaking for

The Concert Hall.

the XVth Congress Committee he wished everyone a happy and profitable stay in Stockholm.

[The speech was then read in English and German.]

Mr. Alegren then called upon the Swedish Minister of Agriculture, Mr. Sam Norup, to declare the Congress officially open. The Minister remarked that man, animals and earth had lived together since the beginning of time and the study of animal disease was one of great importance to the human community. It was a study demanding close international co-operation, and the International Veterinary Congresses, the first of which had been held in 1863, had proved of immense value in fostering the spirit of co-operation.

Mr. Norup remarked on the increase in value of the domestic animal, particularly during the last decade, and made special mention of the campaigns against bovine tuberculosis and brucellosis, two diseases which had been forced to relax their grip on the livestock populations in many parts of the world. He stressed, too the importance of foot-and-mouth disease, control of which demanded a very close international co-operation; a great deal had already been done but there was still a long way to travel.

Concluding, the Minister expressed the desire that these Congresses in the future should become permanent institutions, giving an example in the field of animal disease control, which might well be imitated in other phases of international co-operation. With these words he declared the Congress open.

The meeting then proceeded to elect unanimously the officers of the Congress, as recorded last week, also the Honorary Presidents and Vice-Presidents, as follows:—

Honorary Presidents.—Mr. L. de Blieck, The Netherlands; Sir Daniel Cabot, British Commonwealth; Mr. J. Fortner, Federal Republic of Germany; Mr. F. Müssemeier, German Democratic Republic; Mr. G. Ramon, France; Mr. G. Sanz Egaña, Spain; Mr. K. I. Scriabine, U.S.S.R., and Mr. B. T. Simms, U.S.A.

Honorary Vice-Presidents.—Mr. A. Alegren, Sweden; Mr. G. Forssell, Sweden; Mr. H. Magnusson, Sweden, and Mr. S. Wall, Sweden.

The chair was now taken by the President of the Congress, Professor Karl Eriksson, Rector of the Royal Veterinary College of Sweden, who expressed to the delegates his thanks for the honour they had done him in electing him as their President.

President's Address

In the course of his address Dr. Eriksson said he felt sure they would wish him to convey the greetings of the Congress to His Majesty King Gustaf VI, and he was accordingly arranging for a telegram to be sent to His Majesty conveying the humble greetings of the Congress and expressing gratitude for His Majesty's gracious patronage. This announcement was received with applause.

Recalling that the first International Congress was held at Hamburg in 1863 Professor Eriksson said that veterinary medicine had developed from the empiricism of those days to the exact science that it was to-day. Progress was rapid and during the four years which had elapsed since the last Congress in London in 1949, there had been many notable advances. Many of these would be covered in the 270 papers to be presented to the Congress.

The President then outlined the arrangements for the division of the subjects into the various branches and remarked that knowledge had grown so much that many branches of study had become big enough to form the basis of International Veterinary Congresses themselves. He wondered whether the time had come to form an International Veterinary Union which would sponsor regular Union Conferences and provide help and advice where it was needed. He wanted a permanent co-operating organisation linking together veterinary thought and action in all the countries and said that such an organisation could be built up on the existing national organisations. He hoped that this idea would be discussed during the Congress week.

Science was international and he welcomed all the distinguished members of veterinary institutions of all the countries who would be contributing their knowledge and the results of their researches to the various sectional meetings. Fifty-seven countries were taking part in this Congress and many veterinarians had come a very long way to visit Sweden and attend the Congress.

Sweden was glad to welcome them.

The President then called upon the representatives of international organisations to address the Congress.

Sir Daniel Cabot, speaking on behalf of the permanent Committee for the International Congress, expressed thanks to the Government of Sweden for permitting the holding of the Congress in Stockholm and he drew attention to the arduous work entailed in preparation of such a congress. It involved long hours of work and attention to detail and the Congress owed a great debt to the Organising Committee to whom he would like to express the Permanent Committee's thanks.

He extended the greetings of the veterinary profession of the various countries represented on the Permanent Committee to the Veterinary Profession in Sweden.

Mr. I. Altara spoke for the Office Internationale des Epizootics and remarked that O.I.E. was well represented and was taking a very active part in this Congress. He expressed the greetings of O.I.E. to all assembled in Stockholm.

Mr. K. V. L. Kesteven then rose to offer good wishes for a successful Congress from the Director-General of F.A.O. F.A.O. was vitally interested in this Congress. They had to think of the great problems which arose from the fact that some 68,000 additional mouths were presented each morning at the breakfast tables of the world. F.A.O. had over 60 experts in the field dealing with animal disease problems; 30 of these experts were veterinary surgeons. They were trying to lay emphasis on the regional control of epizootic diseases and Mr. Kesteven mentioned as an example the control and, he hoped, eradication of rinderpest. F.A.O. was also greatly interested in dairy production and in such matters as the co-operation with W.H.O. on the control of brucellosis. It was obvious that this Congress would be of vital interest to F.A.O. in their work

of ensuring a proper standard of nutrition for all the peoples of the world.

Mr. M. M. Kaplan brought the greetings of the World Health Organisation and recalled resolutions passed at the London International Veterinary Congress calling for international co-operation to control brucellosis, rabies and other diseases. W.H.O. had worked on all these problems and reports of some of this work would be presented amongst the Congress papers.

Mr. S. Koch, representing the Fédération internationale de laiterie, remarked that his organisation was primarily interested in the important problems of protecting consumers of milk and said that all organisations interested in these problems must co-operate.

Mr. B. L. Rowan brought greetings from the Secretary General of O.E.E.C. The objectives of O.E.E.C. were to promote co-operation between countries with a view to improving economic standards. It was obvious that veterinary problems must be of great importance and O.E.E.C. were guided on these problems by a working party of veterinary experts. They had recently carried out a survey of disease control in Europe and had estimated the loss in Europe due to animal disease at £640,000,000: this was equivalent to 15 per cent. of the total output of livestock products in the O.E.E.C. area.

He emphasised the important rôle of the veterinarian and his great responsibility in feeding Europe—and indeed the whole world.

Following these speeches there was a quiet musical interlude before Mr. B. T. Simms (U.S.A.) rose to introduce Sir Thomas Dalling. He recalled that Dalling had been trained in Edinburgh and had worked prominently in the field of veterinary bacteriology and pathology before rising to the position of Chief Veterinary Officer and attaining the distinction of a knighthood. Now Sir Thomas was busy with a wider organisation: he ably served the interests of the 68 nations which make up F.A.O. He now called upon Sir Thomas Dalling to deliver his paper.

THE VETERINARY PROFESSION—PAST, PRESENT AND FUTURE

Sir Thomas Dalling

In response to the kind invitation to deliver an address at this, the XVth International Veterinary Congress, with the knowledge that the audience would probably include members of professions other than veterinarians and members of the public, it occurred to me that it might be useful to deal with the work of the veterinary profession and give some views on possible future developments. This appealed to me for two reasons: in my recent travels in different parts of the world it has become increasingly obvious to me that, in many circles, public and private, there exists considerable lack of precise knowledge of the activities of the veterinary profession: and also it seems to me that there is a need for the profession itself to take stock of the paths we are now pursuing and those along which we might travel, not only for the welfare and success of the profession, but more for future assistance to the world and to mankind in general.

Before proceeding further, I would point out that all things written or spoken in this address are my own private views and opinions, and do not represent those of any country, any group of people or any organisation. No one has been consulted: the substance of the address concerns observations and thoughts of the speaker himself.

It would be presumptuous of me even to attempt to trace the history of the veterinary profession from its early beginnings or to extol or condemn the efforts and work of the pioneers and their successors throughout two years. This has already been done by the few historians who have found time and interest in such research activities. Suffice it to say that in every country and in every age there have been found capable thinkers and planners, with foresight, who have fearlessly stated their views and who have attempted to lead the veterinarians, at least in their own countries, into channels which they thought advisable from several points of view.

As countries have developed, as world changes have taken place in trade and industry and as mechanical operations have been introduced, so changes have had to follow in the work and outlook of this profession. At the same time, however, these changes in all parts of the world have not been possible, nor have some of the changes been so rapidly accomplished: this causes the requirements of veterinary services to vary in different localities. There appears to exist in some quarters a tendency to view our work and requirements on a narrow scale, in keeping with the prevailing conditions in one country only, and to fail to appreciate that it is only by viewing the needs of the world as a whole, that a true estimate of the potentialities of the veterinary profession's activities can be made.

In some parts of the world emphasis is still being placed on the individual animal of some of the types of livestock. Taking livestock throughout the world as a whole, the need is to improve its production, one of the essential factors being the maintenance of health with all its implications. There is little doubt that individual animals in some countries, especially countries which are accepting responsibility for assisting in providing suitable animals for maintaining and improving breeds in other parts of the world, will continue to demand the attention of veterinarians. Such animals and such countries are, however, to be considered exceptional, so far as we veterinarians are concerned. The world to-day needs our assistance and collaboration on a much broader scale, and it is our duty and function to guide our energies in the direction of improved livestock production.

The control of epizootics, those spectacular diseases which cause high economic losses, which handicap the full development of agricultural activities and which interfere to such a marked extent with trade and commerce, has been the subject of much veterinary activity in all parts of the world at all times. The ravages and losses resulting from their presence and spread have been and are now well appreciated by the public throughout the world. Attempts, often marked by success, have continued to be made for their suppression; and the methods have varied from country to country and from time to time, depending largely upon the prevailing conditions in a country and the progress made by research workers and investigators on methods of control. We, as a profession, have made noteworthy contributions through our own research work, on techniques and methods to deal with such epizootics; nor have we been slow in associating with workers in other branches of science and adapting results of scientific work, in general, towards a solution of the problems with which we are intimately concerned.

In this paper emphasis will be given to livestock, including poultry, as opposed to small animals whose health and welfare are also the concern of veterinarians, some of whom have specialised in this work which has to be regarded of importance in ultimate human happiness.

It has to be accepted, I think, however, that in some countries at least the poor impetus and encouragement given to veterinarians by the withholding of adequate

financial support and remuneration, discouraged for a long time the training and participation of veterinarians in research, which must ever be the basis and essential consideration of any live and active profession or organisation. Undoubtedly improvements have taken place in this respect: more financial support and encouragement are now being given, in most countries, to livestock improvement, including the study of health and other pertinent factors and it has become entirely clear that research workers within the profession are taking their place side by side with those in other branches of science, carrying out their detailed activities for the benefit, not only of the immediate veterinary problems, but to the general advantage of science. The days of struggle are passing: the days when much of the research work had, of necessity, to be financed by individuals or private organisations (and never must we fail to be eternally grateful to those who were generous enough to encourage research work through financial support and to those self-sacrificing individuals who devoted their lives to the work). Governments and public organisations, now realising the worth and value of research work, are playing an important part, through the provision of funds, in encouraging young veterinarians, men and women, to enter the field of research and to make such work a career. The effects are already evident: techniques and methods of the control and maintenance of livestock health have improved, and will continue to improve, so that veterinarians have in their hands weapons and appliances which make their tasks easier and, at the same time, are of advantage to the world.

The veterinary profession, then, has probably passed through its darkest days and is now emerging into a period where more light is available and because of which it is possible to see the future, although probably even now somewhat dimly. Let us look into the future and try to form some impression of what lies ahead, what part we have to play and how we have to play it in the welfare of the human race.

Veterinary medicine is linked with agriculture, because, in all countries, livestock plays an important part in agricultural activities: not only does livestock convert agricultural plant products into essential food for the human population, livestock also assists in the provision of the materials they themselves consume, and the cereals and other plant products for human consumption. This they do by providing fertilisation for the land and, what is of at least equal importance still in many countries, they are largely responsible for the tilling of the land. Some of us, now familiar with the mechanisation of agricultural operations in our own countries, may fail to appreciate the essential work of cattle and buffalo in agricultural operations in many parts of the world. Without such animals, and it will probably be many years before conditions change in these countries, food production for human and animal use would be well nigh impossible. For these reasons, then, the general work on livestock has to be regarded as an integral part of agriculture.

There has been a temptation, which may still exist among some veterinarians, to consider veterinary activities as being more allied to human medicine than to agriculture. If we consider the duties of the profession to be confined entirely to disease problems, their study and control, then such views may be tenable: but when we realise the wider scope of our activities which in my view have to embrace the many aspects concerned with livestock, it becomes necessary to reconsider the position. We must certainly have a close association with human medicine and with all

scientific work, basic and applied, in order that we in our turn may adapt and apply any finding to the advantage of the work with which we are intimately concerned.

The need to-day throughout the world is for food and more food for the human population: the need is great and urgent and many agricultural activities have to be taken into consideration in the efforts to increase supplies. At this meeting we are concerned mainly with livestock: livestock improvement is one of the methods being used; and it is in this direction that we veterinarians have an essential and important part to play. Not only have we to give all our energies to the subject, we have also to consider very carefully the economics of what we are trying to do in any one country or in groups of countries. There may be, I fear, some lack of appreciation of the immense task we have set ourselves and which, because of our training and experience, must be considered our duty. In my view the time has passed when we consider our sole duty the control of animal disease. It is true that in some countries stress is being laid on the term " animal health " as opposed to " animal disease " when reference is made to veterinary activities. This is all to the good and serves as an indication of the train of thought in the minds of veterinarians and others. Animal health has many ramifications and again it may be said that if veterinarians confine their work to this subject they will be fully occupied. From observations, discussions and a study of the position throughout a large part of the world, I have come to the conclusion that our activities cannot and must not end there. Narrow bridges separate the many factors which influence animal health and livestock production and the future activities on the improvement of livestock production should, in my view, be co-ordinated under one organisation instead of, as at present, being dealt with by a number of bodies who cannot be expected, because of their training and outlook, to have similar views. Co-operation in this work is essential in order to obtain maximum results in a minimum of time: the living animal is the subject of study and I hold that all that pertains to it should be co-ordinated by those best fitted to do so, *viz.*, the veterinarians.

For some time I have been trying to form in my mind an appreciation of the factors concerning livestock improvement and I find they can be considered under five headings, *viz.*: (1) breeding, (2) nutrition, (3) husbandry, (4) health, and (5) disposal of animal products.

Let us examine more closely:

Breeding.—The type of animal most suited to the prevailing conditions in a country must of necessity be a primary consideration in improving livestock. The functions of the animal in that country have to be taken into account, *e.g.*, milk production, meat production, egg production and labour. Opinions may differ considerably on the methods to be evolved, such as whether there should be an effort to improve the animals by selection within the native breeds or whether exotic breeds should be introduced either for establishment or for crossing. Further, with the potentialities of artificial insemination, the time for the introduction of this method of breeding into a country or area has to be given consideration. Genetical studies are important in order to fix types and obviate perpetuation of undesirable characters. Attention given to breeding will therefore assume importance. If we regard the work of veterinarians as related purely to health problems, breeding may appear somewhat outside the scope of his activities. It is important, however, even from the narrow point of view of health, to note the damage that can be done and the losses incurred by the introduction of animals into a part of the world, in which there exist transmittable diseases to which introduced animals have had no access and therefore to which they are in a state of high susceptibility. It is true, of course, that protective measures, comprising immunisation techniques, are available for some of the diseases and are being practised. Artificial insemination, also, has to receive careful consideration, not only concerning techniques and suitability for an area, but also from the point of view of disease transmission. Even in so-called well-developed countries the practice of this method is not without risk to animal health and future breeding complications. Again, time is showing the existence of many diseases associated with the act of breeding: they also have to be guarded against, lest they become established in herds or areas.

The type of animal selected for a country or area must perforce be considered also in relation to the availability and species of food in the country.

On the more general question of livestock production, in some countries already the subject forms part of the veterinary organisation and, so far as my experience goes in these areas, the efforts are meeting with success.

Nutrition.—Feeding constitutes one of the greatest problems in livestock improvement. Economists come into this subject to a great extent, because there is little use in attempting to improve animal production in an area unless feeding materials can be made available at a cost proportionate to the economy of the enterprise. The types of food and their availabilty differ throughout the world and in many countries to-day efforts are being made to improve pastures and the production of fodder foods in order that livestock production, in its turn, can also be improved. The potentialities of cultivating crops in arid parts of the world are good as experiments have shown. Much depends on the availability of water and it is truly encouraging to see the efforts being made by the drilling of wells, irrigation systems and so on. With the introduction of more food supplies of either indigenous or exotic types there have to be considered the effects they will have on livestock health. Undoubtedly, any poisonous or toxic qualities of the plants will receive careful attention, but, in addition, there has to be taken into account the general influence of such plants on the metabolic processes of the animal. In this respect we have to think about the soil on which the plants are to be cultivated: not only its general fertility to produce in abundance but also its composition so far as minor as opposed to gross or major elements are concerned. Disaster could quite easily follow upon any assumptions made without careful experimentation and observation. It is now widely accepted that, in spite of a knowledge of soil composition, deficiencies may be present and reflected either in the growing plant or in the animals consuming the plant. Sometimes the first indications of soil or plant deficiencies are portrayed in the behaviour of the feeding animal. Undoubtedly, the relationship of soil, plant and animal is very close and has to be studied as one complete subject. It is here that the veterinarian, with his knowedge of health and disease, can participate to a marked extent. With our increasing knowledge of the general and specific effects of deficiencies, single or multiple, as well as of excesses, new problems are arising and are being solved. Nutrition, then, with its many issues must be considered an important factor in livestock production and improvement, with which the veterinarian is intimately concerned.

Husbandry.—I have dealt at some length with breeding and nutrition and it may be that some may consider that there is little left to discuss under the term " husbandry." We have to consider, I think, such aspects as housing, where it is practised, movements of animals for special purposes and at certain times, times of breeding, duration of lactation

periods, the use of the calf to induce the mother to " let down " milk, as is practised in some parts of the world, the conditions under which young animals and birds, as opposed to adults, are maintained and other problems of such a nature. All have their repercussions on the health, the productivity and the economic aspects of livestock and livestock production. Veterinarians have a part to play in the study and application of methods of husbandry and their training fits them for this work.

The term " Animal Husbandry " is often closely applied, although it can be regarded in a very wide sense. We have now, in different parts of the world, services termed " Animal Husbandry and Veterinary Services " or even " Animal Husbandry Services " headed by veterinarians. The results appear to be working out well and they give support to the views of some of us that veterinarians must not be separated from any of the vital activities concerning the welfare of livestock, livestock improvement or livestock production.

Health.—The maintenance and improvement of animal health as opposed to more strict control and cure of disease stands out markedly in any schemes for livestock production and improvement. No matter how pastures and feeding materials may be improved, no matter how breeding may be thought to produce animals more suitable for specific purposes, as for example the conversion of food into produce in terms of products or labour, none can reach a satisfactory minimum unless the health of the animals is satisfactory; economic results will not be of the expected order.

As I remarked earlier, spectacular epizootics attract attention and many are now capable of being well controlled. Efforts are being made to apply modern methods of control suitable to the respective parts of the world and this work is likely to be extended. This subject cannot be dismissed without making reference to the need for international as opposed to national action in dealing with epizootics in general, for, as has been said so often, such infections know no frontiers and in spite of the elaborate precautions in force in some countries to prevent the entrance of such diseases, conditions in neighbouring countries militate against their efficiency and the disease spreads. It is encouraging to note that after many attempts in the past to convince the necessary authorities on the real need to practise international co-operation, and on the beneficial results that are bound to accrue, a beginning is about to be made, we hope, on the control of foot-and-mouth disease throughout Europe. This is one of the most vital steps ever taken in disease control and its progress will certainly be carefully watched with a view to adopting similar plans in other parts of the world.

Epizootics will always claim attention, but as every veterinarian and stock-raiser knows there exist a multitude of causes of disease and ill-health, probably less spectacular but causing losses of an economic character just as or almost as important. Many are infectious in type and insidious in nature: others concern feeding and management: while others are associated with the presence of parasites of one variety or another, which either cause death or lessen the productive capability of the infested animals. Parasitic infestations, a subject so long neglected, is now receiving the attention it merits and considerable progress has already been made in the knowledge concerning the lives of the respective parasites and their control. Some of the findings of research workers in this branch of veterinary science are truly remarkable and far reaching.

Nor must we forget the duty of the veterinarian in matters of human disease control. The list of diseases affecting both human beings and animals is long and it can only be by their elimination from the animal population that marked and rapid progress can be made in lowering the incidence of such human infections. We have indeed a heavy and grave responsibility which we have to accept.

Disposal of Animal Products.—Under this heading I include the production of meat, milk, etc., from the living animal, for consumption by the public. It embraces a wide range of subjects—from milk production and handling to slaughter of animals, meat inspection and the handling of meat, etc., until they reach the public. The consuming public has a right to expect to obtain its food supplies of animal origin in a satisfactory condition, wholesome and free from any risk of transmitting disease of any type. No matter which authority in any country may be charged with the necessary duties, the public look to veterinarians as those responsible for ensuring the quality of their supplies of foods of animal origin. In spite of the examples of efficiency shown by many countries in which these duties are carried out by the veterinary service, it is remarkable and almost beyond comprehension to find that in some countries in which the livestock industry and the veterinary services are well advanced, these duties are under the authority of organisations other than the veterinary service. The understanding of health and disease, the recognition of disease in the living and dead animal and the general training and outlook of veterinarians surely fit them more than any other group for this important and essential work. No doubt, in time, the value of veterinarians for this work will be recognised throughout the whole world: it is significant that in countries only now developing their veterinary services this work is included in the duties.

At this point I would like to make a suggestion of a possible result of livestock improvement by any of the methods envisaged. The more productive an animal becomes, the more economic is its position in agriculture. By extending the productive life of an animal, together with increasing its productive capacity, the number of animals kept for a given time will probably be considerably fewer, for a similar amount of production, than at present. While there is no doubt that for world needs more livestock than at present available will be required, the ultimate number of maximum producers required will be less. Coupled with pasture and animal feeding crop improvement, the net result will probably be an overall need for less land for animal use: this would release land for the cultivation of cereals and other foods for human use. Indeed, such a contribution through veterinary activities would be outstanding.

These are some of the views I hold on the duties of veterinarians throughout the world. It may well be argued that such a set of duties constitutes too ambitious a scheme and one that could not be brought into operation for many years. That point is certainly recognised but I hold and hold strongly that in order fully to fulfil our functions we must give very careful consideration to an expansion of our activities, in order not to improve our own position and standing, but to utilise our qualities and training with a view to improving livestock and livestock production throughout the world in this time of dire necessity.

It may be that, to achieve this end, it will be necessary to make some changes in our training and outlook: the fundamental training is already being carried out and any changes necessary would be comparatively small. On the subject of veterinary education, from a study of methods in different countries, there is little doubt that, basically, it is sound throughout the world. There is need for a thorough appreciation of the basic sciences upon which to build the applied work we have to do: but it is my con-

sidered view that a single pattern of veterinary education following upon the fundamental, basic and essential training cannot be laid down for countries all over the world. Conditions of animal life vary from region to region: the activities of veterinarians must also differ and, therefore, the training must be in keeping with the requirements. It may be that a suitable scheme would embrace post-graduate training suitably arranged for different parts of the world. Veterinary education is now undergoing the necessary changes in many countries with the result that veterinarians are well capable of undertaking the changing duties now being given to them. It is my view and hope that further changes will be made where necessary to embrace all the duties and work associated with livestock production, as I have tried to outline in this address. Many veterinary schools now are preparing veterinarians on these lines: others, undoubtedly, will follow in due course with the necessary somewhat small amendments required.

Livestock production is indeed an extensive subject and it is probably felt that its magnitude is such that it cannot or should not be concentrated under any one organisation, for example, the veterinary services. As I view the position, I see livestock production and improvement being carried out under veterinary supervision and direction. It is realised that this is the age of specialisation: it is impossible for any single type of training to fit the trainees to deal with details of a large number of subjects, nor can any trainee be expected to acquire a mass of knowledge. Specialists have to be produced and used. I hold, however, that animal life and animal products come under the purview of those trained in veterinary activities to a much more marked extent than those trained in agriculture, generally: therefore, it seems to me logical to accept that work concerning animals should be dealt with by veterinarians, who would, of course, make full use of the many specialists required for the implementation of the necessary schemes, whereas work on plants and plant life in agriculture comes under those trained along other lines. This view may be difficult to accept even by veterinarians in some countries, but there is already evidence of its smooth working in some parts of the world, and it is difficult to believe that it cannot be applied elsewhere if all concerned approach the problem with an open mind and forget individualities.

We live in an age of changes, an age in which we have to be realistic and to view problems with a wide outlook, ready to make and accept alterations in activities, consistent with the improvement of the welfare and happiness of human life.

The incursion into scientific work of international organisations has done much to broaden our outlook and to make us feel that the part we have to play must not be in a narrow groove. International scientific bodies, meeting every few years, are now dealing with problems in which the veterinarians have an acute interest. Not only are matters of general interest to students of specific sciences included in the programmes, but we now find special sections dealing with animal health and disease, and animal life generally and the attendance and contributions of veterinarians are always solicited and appreciated. The days are gone when we kept ourselves in an almost complete isolation.

International organisations also exist for the furtherance of the welfare and happiness of mankind, be it by cultural methods, by the suppression of disease in the human population or by the provision of more food for human consumption. Such organisations realise clearly the need for collaboration among scientifically trained men and women and between nations, in order that the best arrangements can be made to carry out their objectives. Veterarians have a part to play and their extended interest in all the problems of livestock production and improvement would ensure their eagerness to be of maximum assistance in this drive for increased world food production.

I leave these thoughts with you; they have been put forward after much study and deliberation and after personal experience of the position of livestock production and the need for livestock improvement in many parts of the world.

THE CONGRESS PAPERS

Those Congress papers which we feel may be of particular interest to our readers will be published in abstract form as soon as this can be arranged, but in the meantime a few remarks on the papers in general may be of interest.

The opening session was marked by the address by Sir Thomas Dalling which is reproduced above. In a paper delivered to the Tuesday session, Professor Flückiger, of Switzerland, traced the history of international efforts for the control of epizootics and he gave some interesting data on the activity of the International Office of Epizootics, and of its relationships with the various other international bodies. The International Office of Epizootics was created in 1924 but since 1945 a large number of new international organisations has been established. Professor Flückiger pointed out the waste and duplication of activity which had resulted from the fact that these bodies had concerned themselves with matters relating to livestock diseases control. Activities relating to the control of epizootics could be carried out most efficiently, he said, through a close collaboration between F.A.O. and the International Office, so that agreements between these two bodies must be welcomed and supported.

At the same meeting Dr. Plüm, of Denmark, gave an interesting paper on the Eradication of Tuberculosis, emphasising that the successful campaign in Denmark had been based on the use of the tuberculin test by a veterinary organisation working in collaboration with agricultural bodies, assisted by the provision of adequate funds. Humanity, he said, could not tolerate a disease such as tuberculosis, the danger of which for humans was recognised and for which a certain method of eradication was known. The time had come when discussions should give place to action on the basis of knowledge already in our hands.

Other interesting papers read at the plenary sessions dealt with the aetiology, prevention and treatment of bovine mastitis, artificial insemination, bio-chemical approach to animal diseases, hormonal regulation of metabolism, milk sanitation, and food hygiene. Abstracts of these papers will be presented in due course.

It is impossible to cover all the sectional interests in a short article, but a few special points are worthy of note. In the section devoted to foot-and-mouth disease, Dr. W. M. Henderson gave a valuable paper describing the use of virus culture both for vaccine production and for studies in virus multiplication. Dr. Eichhorn, of the Pan American Foot-and-Mouth Disease Centre, Rio de Janeiro, who also delivered a paper in this section, paid a compliment to the Pirbright workers when he expressed his appreciation of the work of Skinner on the use of un-weaned mice as test animals in foot-and-mouth disease research (Mr. Skinner later gave an interesting paper describing this technique). Dr. Eichhorn also made a plea for some reorganisation and classification of foot-and-mouth virus strains as he felt there was much confusion, and he strongly urged the setting up of some standards so that strains referred to by workers in different parts of the

world could be readily identified. During the discussion Dr. W. M. Henderson referred to Dr. Eichhorn's suggestion, saying that he thought such standardisation might be premature. A good deal more work and examination of all strains by many different methods was necessary before any definition of strains could be undertaken. This programme included a paper by Dr. T. Childs, of Canada, describing the eradication of the first outbreak of foot-and-mouth disease in Canada. The paper was accompanied by an excellent colour film. In reply to a question, Mr. Hall, the Deputy Chief Veterinary Officer of Canada, affirmed that they believed in the stamping out method and had no intention of allowing vaccine to be made in, or imported into, Canada. They would not use the stamping out measure at any time unless confronted with the failure of the slaughter and quarantine method.

An interesting paper on the International Standardisation of Veterinary Biological Products was delivered to the Bacterial Diseases Section by Dr. Stableforth. After discussing all aspects of his subject Dr. Stableforth concluded that it appeared that we could get agreement on standards and in Great Britain recently we had tried to go farther on the anaerobe side. He put it to the meeting, "What standards should we next go for in international collaboration?" and he asked for the meeting's guidance. Following Dr. Stableforth's paper, Dr. Montgomerie remarked that a committee set up by the W.H.O. had already achieved a great deal in the standardisation of biological products, and this was a body to which we could appeal. He referred to the development of the British Veterinary Codex and mentioned the great difficulties met with in preparing that publication in the case of vaccines and sera. Provisional standards would appear in the Veterinary Codex, but it was hoped that before the next International Veterinary Congress there would be *real* movement in the direction of biological standardisation.

Dr. Montgomerie then proposed a resolution recognising the need of urgent international action for the standardisation of biological products of veterinary interest, welcoming the action of the committee of biological standardisation of W.H.O. and suggesting that that committee be urged to continue its work by providing standards for convenient veterinary biologicals. Those biologicals which merited immediate attention were *Clostridium welchii* antitoxins beta and epsilon and swine erysipelas vaccine and anti-serum. This resolution provoked a great deal of discussion and there was a body of opinion, led by Professor Flückiger, who thought that the Office Internationale des Epizooties was the proper body to do this work. (The resolution was left over until the Thursday meeting when it was carried *nem. con.* by 30 votes.) A subsidiary resolution was put up proposing to the O.I.E. in Paris that their work, already begun for the international standardisation of biological products, "be accelerated as much as possible." Several speakers pointed out that there was no incompatibility between the two resolutions but one, in particular, expressed surprise that one could accelerate something which had not yet begun! Sir Thomas Dalling pointed out that I.O.E. had a committee which considered the suitability of biological products. The committee which had been set up by W.H.O. was urgently concerned with the laying down of standards for biological products. There was, therefore, nothing incompatible between the two resolutions. The second resolution was then passed by 18 votes to one, and both resolutions were passed to the Chairman of the final plenary session for action.

Other points of interest amongst the papers included an excellent colour film illustrating gut oedema in pigs and accompanying a paper on this subject by Dr. Austvoll, of Norway. The film was outstanding and should be of great value to workers in this country. A paper by J. H. Rust & B. F. Trum, of the Atomic Energy Commission Agricultural Research Programme, Oakridge, Tennessee, created very great interest in the physiology section. Their paper concerned the observations on the effects of irradiation of the whole body of various species of animals with particular relation to the blood, bones and thyroid. Another paper presented to the same section by J. Ludvigsen on "Muscular Degeneration in Hogs" provoked a good deal of discussion, and it was evident that the German veterinarians had done some sound histo-pathological studies of this condition. In the parasitology section an interesting paper by Professor T. W. M. Cameron on factors determining the geographical distribution of parasites provoked some useful discussion, but it must be admitted that the majority of the papers in this section were not of a type likely to provoke any worthwhile discussion. One paper, by K. I. Scriabine, reported on "Helminthology in the Soviet Union." This paper was filled with propaganda but very few scientific facts. It was received in stony silence.

These are a few comments on some of the papers. It was impossible for a single individual to be present at all the papers which might interest him since the sections were running concurrently sometimes in buildings half a mile apart. A good deal of the dross could profitably be omitted from a Congress programme so as to allow a greater spacing out of the more worth-while papers and more time for discussion.

The arrangements for the sectional meetings were, on the whole, very good, but it seemed a mistake to hold small sectional meetings in a very large hall (a mistake we made at Harrogate). The Main Hall was really unsuitable for sectional meetings—it was too large and doors were constantly opening and shutting and speakers allowed to speak from the floor of the house were often inaudible.

Translations are a necessary feature in any international congress and some of these at this congress were very expertly handled. One or two sections were not well served, however, and one chairman even seemed impatient when some of his audience asked for translation to enable them to follow the discussion.

Apart from these criticisms the sections were very adequately organised and a very great volume of papers has been left to us to digest at leisure after the immediate excitements of the Congress have died away.

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FILMS

During the Congress a great many films of veterinary interest were shown and these attracted a great deal of attention. An interesting innovation was the use of 3-D technique in a few short films illustrating surgical operations. In one case a film had been made by the ordinary method of a caesarean operation in a bitch and it was shown for comparison with a 3-D film taken of a similar operation. Technique in the case of the 3-D film was not perfect and no doubt there will be improvements, but it must be admitted that there seemed little advantage in this modern trend. It did show tissues in depth but the operator's hand, photographed in the act of suturing the wound, came out to the audience in a somewhat distracting way. Judgment on the value of 3-D for surgical demonstration must be reserved until we see more of it.

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THE CONGRESS BANQUET

The Congress banquet was held in the great Blue Room of the City Hall on the evening of Tuesday, August 11th. The hall was filled to capacity and tables had been set out in every available corner. Our Swedish hosts believe in loosening up early in the evening and a round of schnaps served with the smoked salmon induced a warmth and geniality which quickly broke down the barriers of language and race and set all tongues wagging. A feature of the

occasion was the great procession of waiters and waitresses. Each new course and each replenishment of glasses was heralded by a fanfare of trumpets and to an accompaniment of great cheering and clapping the long procession of white-clad waiters and waitresses wound along the great gallery and down the marble staircase to deploy amongst the tables dispensing their cheerful tray-loads. Seen as they descended the staircase, each bearing a tray aloft and walking majestically down in time with the music, they looked like some great choir descending from the choir gallery into the nave of a cathedral. Although the waiters and waitresses did not sing to us themselves they brought with them the distillation of song and from the glasses which they bore so triumphantly down the staircase came the spirit which transformed the scene, and shouts and laughter and bursts of song gave evidence of the transformation of staid veterinarians into joyous choristers.

The orchestra played during this great feast and rousing choruses broke out spontaneously from the delegates.

Earlier, an announcement had been made that there would be no speeches (an announcement received with acclamation) and a message of welcome from the Minister of Agriculture was read. One or two speeches seemed to be attempted but it must be admitted that schnaps and speeches do not go well together and it is doubtful how much of them was heard. The various toasts were drunk with enthusiasm.

After the dinner the guests wandered out onto the beautiful terrace to see the twinkling lights of Stockholm across the water and the lovely floodlit fountain—an unforgettable scene. The tables had then been removed and the floor was cleared for a display of gymnastics by a troupe of young Swedish girls dressed in pale blue. They performed exercises, cartwheels, hand-stands and complicated vaults over the horse with wonderful grace and charm and their entertainment was greeted with tumultuous applause.

Then followed the dancing. Many distinguished veterinarians could be seen cutting most elegant capers and the whole atmosphere was charged with good humour, geniality and cheerful noise.

When the evening finally closed and the last taxis were taking us back to our hotels we made the interesting discovery that the Stockholm dawn breaks at 2.30 a.m.

And so to bed. Well content.

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OTHER SOCIAL FUNCTIONS

Night Concert in the National Museum

One of the most enchanting functions of the Congress Week was the night concert arranged by our Swedish hosts. It was held at the National Museum in Stockholm on Wednesday, August 12th, and was very well attended.

The National Museum of Stockholm was one of the first museums in Europe to arrange regular concerts and it is possible to enjoy on the same evening the contemplation of beautiful pictures with the listening to beautiful music. Some of the guests spent the time strolling through the galleries looking at the magnificent collection of Swedish, Dutch and French pictures and letting the music contribute a mood and a background to the enjoyment of these works of art. The majority sat in the gallery around the orchestra or on the great marble staircase and listened.

The concert was provided by an orchestra from the Swedish Broadcasting Corporation who played the programme of music by Scandinavian composers with rare delicacy. The programme also included songs sung by Maud Christiansen.

Everyone enjoyed the evening and voted it a great success.

The Drottningholm Theatre

On the evenings of Thursday and Friday, August 13th and 14th, parties from the Congress were taken to visit the famous Drottningholm Theatre.

Meeting on the Klara Strand shortly before 7 p.m. we got aboard the pleasure steamers which were to take us on our voyage. It was a beautiful evening and the sun was smiling down on us as the two steamers set off down the Mälar Lake. We all enjoyed the wonderful scenery, the great pine woods coming right down to the water's edge, and the many boats busily fussing about in the calm waters of the channel. We arrived at Drottningholm just as the sun was setting behind the hills and we were led at once to the theatre.

The Drottningholm Palace Theatre was built in 1766 as an annexe to the Royal Summer Palace, and it is a very beautiful building. It boasts a stage of 62 ft. depth and this is equipped with stage machinery, designed by the Italian Donato Stopani, which permits of change of scenery almost as rapid as by means of a revolving stage. Indeed, our hosts were so proud of this feature that the scenery change between the two pieces which were presented was done after the curtain went up so that we could see for ourselves how miraculously the drops and wings were changed. We were told, too, that very realistic thunder was produced by a barrel filled with stones, placed in the attic and tipped over by means of a rope, and we had ample evidence of this with the gorgeous storm evoked by the magician in Mozart's little gem " Bastien and Bastienne."

The shot fired at the masked ball at the opera in Stockholm in 1792 not only terminated the life of Gustaf III but also ended the greatest era in the history of the Palace Theatre at Drottningholm because it was Gustaf III, a keen lover and supporter of art, who made Drottningholm the centre of theatrical and musical life in Sweden.

Since 1792 the theatre fell into disuse and was even for a time used as a slaughterhouse. It was, however, restored in the early 1920s and is now used every summer for performances of operas and plays. The seats are still marked with the inscription : " pages, gentlemen and nobility," but in this democratic age it was a case of first come, first served, as we entered the theatre and took our seats. It was a very animated scene, and looking round the auditorium I could see Germans, Swedes, Danes, Americans, Turks, French, Jugoslavs, Scots and Australians, and a couple from Fiji, and, yes—there were also some English. Presently the chatter was stilled and an announcer told us that we had not only come 50 minutes in a steamer but we had gone back 250 years in time. He told us of the history of the theatre and introduced us to the orchestra, strings, clarinets and French horns who were all dressed in the wigs and costumes of the 18th century. Then the play began.

The piece presented for our delectation was " Bastien and Bastienne," a charming comic opera written by Mozart at the age of 12. It was well acted and beautifully sung and the delicate melodious music of the boy Mozart produced for us a delightful atmosphere most fitting to the century and to the occasion.

After the operetta and a few minutes' pause came the ballet ; on the same subject as the operetta. Perhaps the dancing of the ballet was not quite up to the high standard set by the singers, but it was very enjoyable. The highlight in this performance was the descent from heaven of a beautiful little fair-haired Cupid—sitting on a seat decorated with flowers and lowered gently from the "flies." Walking forward and uniting the two lovers, this tiny little blond-haired figure stole the show and the curtain came down to tumultuous applause.

After the show the company filed into an adjacent building

where they were regaled with a light supper supplied by courtesy of the Swedish Farmers' Association—and so back on the boat and back to Stockholm. A very memorable evening.

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DISTINGUISHED FOREIGN VETERINARY SURGEONS HONOURED BY THE R.C.V.S.

Presentation of Hon. Associateships to Professor Bendixen, Professor Lägerlof and Dr. Ramon

At a very charming little ceremony in the Concert Hall, Stockholm, on Friday, August 14th, the Royal College honoured three distinguished foreign veterinarians.

The proceedings were opened by Professor Glover, speaking as President of the Royal College, before an audience of over 100 veterinarians from Britain, Sweden, Denmark and France. Professor Glover remarked that it was a very great privilege for him to have the honour of conducting the ceremony and he was fortunate in having on the platform with him Sir Thomas Dalling, a former President, and Dr. W. R. Wooldridge, the Vice-President.

He explained that the Royal College, under its charter, was empowered to confer Honorary Associateships on eminent scientists and they regarded this as a great privilege. It was only on rare occasions that the opportunity arose to confer the diploma on suitable recipients and this International Congress seemed a particularly appropriate occasion. His Council had decided to offer the award on this occasion to five distinguished scientists. They were Professor Bendixen, Professor Lägerlof, Dr. Ramon, Dr. Clunies Ross and Dr. H. H. Green.

It was a matter of great satisfaction to him that three of these eminent men were present at the Congress and that he would have the opportunity of presenting these diplomas in person.

Professor Glover then introduced each of the recipients.

Professor Bendixen, he said, was a graduate of the Royal College of Copenhagen, and was an assistant in the Department of Pathology in 1923. He was a disciple of the eminent Professor Bang whose researchs on brucellosis were world famous. Bendixen was held in such high esteem that in 1931—32 he was sent abroad to study in foreign countries (including England) and it was at this time that he made so many friendships with British veterinary workers. Bendixen succeeded to the chair on the death of Professor Bang and has done scientific work of outstanding merit. In the United Kingdom Professor Bendixen was held in the highest esteem and he had done much to foster the cordial relations between Britain and Denmark. (Applause.)

Professor Glover then presented the diploma with the words, "Professor Bendixen, as President of the Royal College of Veterinary Surgeons it gives me great pleasure to present you with this Honorary Associateship and I offer my most sincere congratulations." (Loud applause.)

Turning now to Professor Lägerlof, Professor Glover remarked that the Professor of Obstetrics of Stockholm was so well known as to need no introduction. Lägerlof, who became Professor at Stockholm in 1934 had specialised in conditions affecting reproduction in animals and had gained a world-wide reputation. In Europe he had been the leading exponent of this science during the past 25 years. The profession owed a great debt to Professor Lägerlof for his studies in this important branch of scientific work.

Professor Glover referred to Lägerlof's visit to the Scarborough Congress of the N.V.M.A. in 1936. Lägerlof's stimulating address on that occasion had had a very great effect in Britain and had led to a considerable development of research on the reproductive disorders of animals.

Group Taken on Occasion of Presentation of R.C.V.S. Diploma

L.-R.—Professor Lägerlof, Dr. Wooldridge, Professor Glover, Professor Bendixen, Dr. Ramon, Sir Thomas Dalling.

The President remarked further that he was glad to have this opportunity of publicly thanking Professor Lägerlof for the part he had played in making the present Stockholm Congress such a pronounced success.

Professor Glover then presented the diploma to Professor Lägerlof amidst loud applause.

Professor Glover then turned to Dr. Ramon. Speaking in French, he said that he did not wish to impose on Dr. Ramon a detailed account of his contributions to science but he would like to remind the audience that Dr. Ramon studied at Alfort where he came under the influence of Professor Vallée, and it was the result of the wise counsel of Professor Vallée that Ramon had become assistant to M. Roux, the director of the Pasteur Institute, and finally had become chief of serum production. Professor Glover remarked that after the first world war he himself had the good fortune to study at Alfort and at the Pasteur Institute and the name of Dr. Ramon was often mentioned for his brilliant researches and his studies on formalised toxins and the principles of production of toxoids, and their employment in vaccination, were probably the most important contribution of the century to the science of immunology. Indeed, all branches of immunology had benefited from Dr. Ramon's work. Much important work on anaerobes, research on viruses and on vaccines containing adjuvants and in many other directions would have been impossible without the foresight and the profound researches of Dr. Ramon. In fact, his researches had had effect not only in the veterinary sphere but also in the medical field and in the study of plant pathology. His work had eased the task of the veterinarian in the control of tetanus and other anaerobic infections and in the control of virus diseases.

No other living veterinarian had made a more significant contribution to veterinary science than had Dr. Ramon. Apart from the great honours conferred on him by his own country he was a member of many foreign scientific associations and had been presented with the doctorate of many universities.

Turning directly to Dr. Ramon our President said, "Le Conseil du Royal College of Veterinary Surgeons désire témoigner l'appréciation des vétérinaires en Grande Bretagne des services renders à la science par le docteur Ramon. Au

nom du Conseil du Royal College of Veterinary Surgeons je vous prie d'accepter le diplome d'associé honoraire et je vous offre toutes mes felicitations cordiales." (Loud applause.)

Dr. Ramon then replied on his own behalf and on that of Professors Bendixen and Lägerlof. He said that in the life of a man of science it was a great source of satisfaction to be appreciated not only in his own country but in countries overseas.

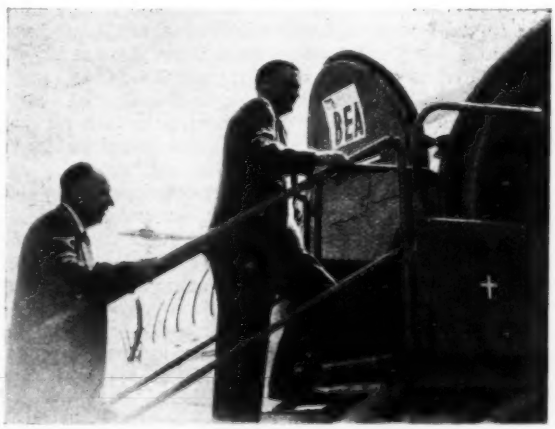
This great sense of satisfaction was enjoyed that day by his colleagues Professor Bendixen, Professor Lägerlof and himself and they appreciated very much the honour which had been done to them.

The fact that this honour was conferred on foreigners by the Royal College was evidence of the universal nature of science and recalled the famous words pronounced in 1884 at the international medical conference at Copenhagen that even if the man of science has a country, science herself has no nationality and embraces the whole human race. The work done in every country crossed the frontiers and the co-operation which existed was to the benefit of all mankind. Discovery is never the work of one man alone, particularly in biology. The torch of knowledge was carried on from hand to hand by the seekers after truth until the day when it throws a strong light over the problems of the day.

Dr. Ramon emphasised how deeply he and his two colleagues Professor Lägerlof and Professor Bendixen felt at the honour which the Royal College had conferred upon them and expressed the very deep gratitude of the three who had been honoured in that way.

In conclusion, Dr. Ramon said, "Nous remercions chaleureusement nos confrères qui nous faut cortége ici ; qu'ils veulent bien partager avec nous, en cette heure solenelle, le tres grand honneur qui nous est fait et qui va à travers nos personnes à la profession vétérinaire mondiale tout entière" The ceremony then concluded.

En Route for Home



The C.V.O. Boarding the Aircraft at Stockholm.

. . . . .

Overheard at Copenhagen Airport *en route* for London as our plane touched down from Stockholm:—

(American voice): "Well, that's the most comfortable plane I've ever travelled in."

(American voice's wife): "Why don't we have these in the States?"

It was a Viscount turbo-prop. air liner.

Bravo, B.E.A.!

THE ROYAL VETERINARY COLLEGE AND THE STATE VETERINARY MEDICAL INSTITUTE

Throughout the Congress visits were arranged to places of veterinary interest both in and out of Stockholm and these parties were attended by large numbers.

I joined a party visiting the Royal Veterinary College, Stockholm, and the State Veterinary Medical Institute on the afternoon of Friday, August 14th. An abstract of the official document portraying the veterinary services of Sweden is reproduced below, but I may say here that in the Royal Veterinary School in Stockholm, included therein, the laboratories and classrooms are very fine and well equipped, and for an annual intake of 35 the accommodation seems, by our standards, almost lavish. But, of course, our standards on this matter have had to fit our purse and it is only within the last few years that we have seen some start made towards providing adequate facilities for our students.

The clinical and animal husbandry departments are particularly impressive and I was told that there was an adequate amount of clinical teaching material available, covering all classes of animals. One of the features which interested me was the small herd of milking cows and the modern dairy where students are instructed in feeding and milking and all the problems associated with the management of the dairy cow.

The stable accommodation was very fine and there was ample space and facility for surgical demonstration of all kinds.

The State Veterinary Medical Institute is a building of fabulous dimensions, thoroughly equipped well and lavishly provided with all the paraphernalia of the manufacture of vaccines and sera. Built to-day, the building would surely cost well over a million pounds and many of the visitors, themselves responsible for vaccine and serum production, must have felt a little envious as they passed through the spacious and well-equipped laboratories or looked through the windows into isolation quarters or "sterile rooms." The total staff consists of 80 persons of which 28 are qualified, and the annual budget is about £150,000. In comparison with some much smaller institutes in this country this seems a very small staff, but the Swedish Veterinary Services are very fortunate in having such fine facilities provided for them. H. E. H.

. . . . .

Veterinary Services in Sweden

The veterinary services in Sweden embrace three main institutions, the Royal Veterinary College, the State Veterinary Medical Institute and the Veterinary Administration.

The Royal Veterinary College

The first Swedish Veterinary School was established at Skara (in the county of Västergötland) in 1775, but the need for a more centrally situated educational institute resulted in the foundation in 1821 of a Royal Veterinary School in Stockholm, which in 1867 was renamed the Veterinary Institute. Expansion and rebuilding on the present site have proceeded apace since 1906 at the instance of the Government. In 1914 the Institute was reorganised as a college and in 1935 received the right to grant a veterinary doctorate. Since 1889 the Veterinary College has been the only veterinary educational institute in Sweden, largely independent of the universities, but with similar organisation, tuition and staff. The College, on the other hand, comes under the direct authority of the Ministry of Agriculture, and its work is governed by statutes promulgated by the Government.

Teaching and research are carried out in 15 scientific departments, each of which is run by a professor (12), a

lecturer (one) or an associate professor (two). The total period of instruction is five years (10 terms), but "most students take six to seven years for their studies." Disease or military service can prolong the time taken for studies even more. The facilities arranged at the College for the care of sick animals enable the student to obtain clinical experience at the clinics. There are stationary surgical clinics and policlinics for large and small animals, non-ruminants, ruminants, for obstetrics and gynaecology, and an ambulatory clinic, which is run as a general practice. The students' service in the clinics lasts for 22½ months and begins after the Intermediate Veterinary Examination, usually in the fifth term. During this time the students receive instruction and practice in clinical examination of sick animals, of which a great many pass through the clinics. They take part in demonstrations, see medical and surgical treatment of the patients, assist at operations, and under the guidance of the teachers, carry out minor operations and other therapeutical treatments. When the students have finished their fifth year, have done all their clinical service and have passed certain prescribed examinations, they receive permission to practice as locum tenens for limited periods to gain practical experience and money to support themselves.

A qualified veterinary surgeon may acquire a degree of Doctor of Veterinary Medicine by writing a thesis which he presents and defends at a public disputation in the College. The scientific requirements for the doctor's thesis are the same as at a university. The title Doctor of Veterinary Medicine (V.M.D.) is awarded those who produce and satisfactorily defend their thesis.

The State Veterinary Medical Institute

Here again, the Institute functions directly under the Royal Ministry of Agriculture. In its new building, erected from 1942–44, it functions partly to help various authorities, organisations, and private persons with diagnostic examinations and other scientific work in veterinary medicine and food hygiene and partly for scientific research. It must carry out bacteriological, patho-anatomical, serological, parasitological and chemical examinations and at the same time fulfil an advisory function. It must produce and supply sera, vaccines and other bacteriological preparations and, by means of laboratory and field examinations, assist in the most effective possible prevention and control of livestock disease. The Institute is bound, in the first place, to assist the Royal Veterinary Board with the requisite examinations for the control of infectious diseases of domestic animals. Other national and communal authorities, associations or individuals may apply to the Institute for help in regard to disease control and food hygiene.

The Institute is directed by a Board consisting of six members and immediate control of its activities is exercised by a director, who is also a professor and is appointed by the King for a period of six years at a time.

The Institute's scientific activities are divided among six departments, namely the Bacteriological, Patho-anatomical, Serological, Parasitological, Chemical and Consultative. Each one of them is headed by a departmental chief who is directly responsible for his department's work. The scientifically qualified staff consists of, besides the Institute's Director, six departmental chiefs, six laborators, four consultants and 12 demonstrators. Departmental chiefs, laborators and consultants are appointed by the King on the suggestion of the Board, after the applicant's scientific competence and ability have been examined by specially assembled experts. The scientific staff at the Institute is liable to be required to give demonstrations and lectures at the Veterinary College, and also to help with instructional courses for the civil and military veterinary services.

The Institute's yearly budget reaches 2·3 million Sw. kronor ($430,000, £150,000 approximately), of which about 1,700,000 Sw. kronor goes in staff salaries, and about 600,000 in expenses. The income from diagnostic examinations carried out and bacteriological preparations sold comes to about 670,000 Sw. kronor yearly. Fees are fixed by the Royal Veterinary Board. In special cases there is statutory exemption from fees for certain examinations or bacteriological preparations. Fees for diagnostic examinations are generally low, so that they do not discourage farmers from sending in for examination material of importance in disease eradication.

The Institute is housed in 10 different buildings. Besides an L-shaped laboratory-building of four storeys with about 160 laboratory rooms, there are post-mortem rooms, stalls for larger and smaller experimental animals, a fur-animal enclosure, a rabbitry, a mouse-breeding establishment, stalls for 70 serum horses, storage buildings, laundry, central-heating and workshops. In addition there is an office building with a lecture theatre to hold 70 people, and living accommodation for employees.

The Veterinary Administration

The right to practise as veterinarian in Sweden is acquired by passing the veterinary surgeon's examination in the country and authorisation by the Veterinary Board. The number of authorised veterinary surgeons in Sweden at the present time exceeds 700.

The central authority for the veterinary service in Sweden is the Veterinary Board, which was established in 1947. Previously veterinary affairs came under the Medical Board, and for a while the campaign against bovine tuberculosis was directed by the Board of Agriculture. As a central government office the Veterinary Board is responsible to the Crown (through the Department of Agriculture).

Official functions of the Veterinary Board include the general supervision of the general health and care of the domestic animals in the country as well as of the production and quality of animal food products; for the rest it is empowered to deal with all veterinary matters in the country. Further, the Veterinary Board must hold itself at the service of the courts and other authorities or institutions by giving expressions of opinion on matters of forensic-medical interest in so far as animals are concerned, as well as of State and municipal authorities, with any information or assistance which is called for by them and which is within the field of the Board's activities. "In these respects it is to be noted that the Veterinary Board constitutes the supreme expert authority in questions concerning the care and protection of animals." Further, the Veterinary Board must, on request, provide authorities or institutions at home or abroad with information concerning any matters which come within the field of its activities. Among the Board's general duties, finally, may be mentioned that of keeping a register of all veterinary surgeons and providing a printed list of them for the guidance of pharmaceutical chemists, in view of the veterinary surgeon's competence to prescribe violent and poisonous medicaments.

The Veterinary Board consists of a Director-in-Chief and, as members, four heads of departments, each in charge of his own department, *viz.*, the General Department, the Hygiene Department, the Tuberculosis Department (for the combating of tuberculosis and brucellosis in cattle) and the Administrative Department. The heads of the general, hygiene and tuberculosis departments, who must be authorised

veterinary surgeons, have the title of "veterinärråd" (veterinary counsellor).

The Veterinary Board is assisted by a Scientific Advisory Committee, consisting of persons of outstanding ability and tried experience in the different sciences and fields of activity of the Board.

The responsibility for the carrying out of measures against animal diseases, earlier mainly a municipal matter, was taken over by the State on January 1st, 1934. The direct responsibility for measures against animal disease rests upon a veterinary staff, which consists of county veterinary officers (24), district veterinary surgeons (282), veterinary stipendiaries (12) and a number of assistant veterinary surgeons.

Municipal veterinary posts exist in 22 towns. In Stockholm there are three municipal veterinarians in addition to which the Stockholm municipal board of health employs two more veterinary surgeons for the supervision of foodstuffs. A municipal veterinarian's chief duty is to exercise control over food products of animal or, in certain cases, of other origin. Unless otherwise prescribed, the municipal veterinarian may deal with general cases of animal disease and with other veterinary activities in the municipality. Municipal veterinary services, with which are associated the duties of veterinary meat inspector, are appointed by the Veterinary Board after consultation with the municipal authority in question. Other municipal veterinary posts are filled by the municipality after the Veterinary Board has reported on the applicants' competence.

Veterinary Surgeons and Public Meat Inspection.—Public meat inspection—which is based on the regulations for the compulsory inspection of meat, laid down chiefly in Meat Inspection and Slaughter-houses Law—is carried out in public slaughter-houses, municipal meat inspection centres and private slaughter-houses—so-called control slaughter-houses.

Public slaughter-houses are owned and managed by the municipalities in question, and are seven in number. Veterinary meat inspectors at public slaughter-houses are appointed by the Veterinary Board after consultation with the appropriate municipal board of health or special authority in charge of the slaughter-house. The number of veterinary meat inspection posts is 14, of which it can be noted that the post of chief veterinary meat inspector at the Hälsingborg slaughter-house is combined with post of municipal veterinary surgeon.

Municipal meat inspection centres are to be found in approximately 150 places. On December 31st, 1951, compulsory meat inspection ruled in about 50 per cent. of the municipalities then existing. About 96 per cent. of all the meat in the kingdom was under inspection. The appointment of veterinary meat inspectors for municipal meat inspecting centres is subject to regulations identical with those for the appointment of veterinary meat inspectors at public slaughter-houses. The veterinary posts at the municipal meat inspection centres are all of a part-time character.

Control slaughter-houses, the majority of which are owned by agricultural co-operative associations, have been established in 74 places. The veterinary meat inspector at control slaughter-houses is appointed by the Veterinary Board. These veterinary inspection posts are usually whole-time appointments and at some of the larger slaughter-houses there are two inspectors.

Import and export veterinary inspectors are appointed to carry out inspection and other hygienic examinations, while at all quarantine stations there must be at least one quarantine veterinary inspector, appointed by the Veterinary Board.

Artificial Insemination.—In respect of veterinary hygiene, the A.I. work in Sweden is under the Veterinary Board's control. In other respects those who carry out such activities are under the Board of Agriculture. At present activities cover about 300,000 cows, or about one-fifth of all the bovines in the kingdom. With one or two exceptions A.I. work is carried out on a system of associations. There are about 40 authorised veterinary surgeons and veterinary students employed as chief and assistant veterinarians for A.I. associations. In addition there are about 50 foreign veterinary surgeons, who came to Sweden as war refugees and have been trained at the Veterinary College in A.I. work, who are employed by the A.I. associations.

The function of the Military Veterinary Service is to supervise the care of the health of army animals, to inspect animal foodstuffs for the army and to see to remounting and the supplies of horses. The head and superintendent of the military veterinary organisation is the Chief Army Veterinary. He is responsible directly to the Commander-in-Chief of the Swedish Army, and his staff—the veterinary inspection—is included in the army command.

Infectious Animal Diseases.—Sweden is in the favourable position of being relatively free from infectious animal diseases. This can be partly attributed to its geographical position, but otherwise it is due to the strict watch against various diseases maintained at the frontiers and, in respect of those diseases which, nevertheless, have got into the country or which are indigenous, to the effectiveness of the measures to combat them. The most stringent of restrictions are those concerned with imports from regions affected with rinderpest, foot-and-mouth disease, swine fever, fowl pest and rabies. Of these diseases, rinderpest has not occurred in the country since the end of the 18th century, and rabies not since 1871.

Among those domestic animal diseases which earlier ravaged cattle in the country and, apart from the losses caused to agriculture, were even a serious threat to the health of the people, bovine tuberculosis and brucellosis take first place. Both have been the object of a many years' State-supported campaign, which now appears to have reached its final stage.

The present measures against bovine tuberculosis—combated with State support since 1897—are partly compulsory, partly voluntary.

The present official prescriptions for the control of brucellosis were for the most part issued in 1938 and were revised in 1948. As in the case of the tuberculosis campaign, the measures are partly compulsory. There are thus "brucellosis-free areas" and "brucellosis-protected areas" and the regulations about moving animals into the areas are the same as those enforced in the case of tuberculosis.

Among the indigenous diseases, which are combated by means of State support in cleaning up herds, must be included fowl typhus and other paratyphoses in fowls. It should also be mentioned that since January 1st, 1952, the Veterinary Board has supervised certain control measures carried out by the rural-economy associations and the slaughter-house associations, in respect of health control of pig farms, and the Veterinary Board is preparing an experimental campaign, with the aid of State grants, against infectious mastitis in cows.

The epizootic law in which are contained the basic regulations in Sweden governing the campaign against epizootic diseases, is applicable to the following diseases: Foot-and-mouth disease, rinderpest, contagious bovine pleuropneumonia, infectious bovine emphysema, anthrax, rabies, swine pest, glanders, infectious equine abortion, scab (psoroptic and sarcoptic) in horses and sheep, sheep pox, fowl pest and fowl cholera. By special Royal proclamations it has also been laid down that the epizootic law shall apply

wholly or in part to certain other diseases, among them dourine, Newcastle disease and canine distemper.

Of the diseases named the country is free from the following : rinderpest, contagious bovine pleuro-pneumonia, rabies, glanders, scab in horses and sheep and dourine. Swine fever has not been met with since 1945, fowl pest not since 1948. One or two isolated cases of Newcastle disease have occurred in recent years. The yearly total of outbreaks of anthrax and infectious bovine emphysema has not exceeded 50 for a long time. The other diseases—with the exception of foot-and-mouth disease, which is treated specially below, and canine distemper—are very infrequent, if they occur at all.

The campaigns against those diseases to which the epizootic law applies without reserve are carried on in the main along similar lines. A description is given below of how the—at present—most outstanding disease is combated, namely, foot-and-mouth disease. When foot-and-mouth disease is apprehended or actually occurs in Sweden, this is announced on the radio. In the Press, especially the agricultural Press, are published descriptions and pictures of the disease, with warnings about detecting the disease in time and about the responsibility of the owners in this respect. It is urged that, if the disease is suspected, a veterinary surgeon be called in, at the expense of the State ; and also, until this veterinary surgeon has examined the animals, all movement of persons, living animals and other products in and out of the farm be stopped.

When an outbreak of foot-and-mouth disease occurs, animals on the farm which are susceptible are slaughtered at once. Manifestly sick animals and those with high temperatures are slaughtered on the farm and buried there, while the rest are sent to the slaughter-house in specially equipped trucks to be slaughtered at a time when no normal slaughtering is going on. For such slaughtering special precautions are laid down. After this the buildings and equipment of the farm are disinfected. The total expenses, with the exception of losses due to the prohibition of the use of pastures and the sale of milk and milk-products—for which there is special State-supported insurance—are covered by the State. In the event of outbreaks of foot-and-mouth disease in certain "elite herds," which are vaccinated whenever the disease seriously threatens the country, slaughter is not obligatory. When an infected herd is slaughtered, all animals within a radius of 2 to 4 kilometres from the infected herd are vaccinated. In this area a strictly imposed "stand still" for 10 days after the slaughtering is advised. Further, all markets, auctions and assemblage of animals on a large scale are forbidden in the affected county. Further, unauthorised persons may not enter cow-houses and places where fodder and straw are kept, slaughter-houses, etc. Prescriptions are also enforced concerning the nature of motor trucks for the transport of living animals, and concerning the disinfection of such vehicles, of working clothes and of persons who work in the slaughter-houses or who transport milk, etc.

When foot-and-mouth disease threatens Sweden, all animals belonging to the A.I. associations in Malmöhus and Kristianstads counties, *i.e.*, about 100,000 animals, and also in the same counties some farms of high breeding value, *i.e.*, about 10,000 animals, have been vaccinated. The vaccine is bought by the State from Denmark, and vaccination is paid for by the State.

The precautions indicated above have, on the whole, had satisfactory results. The epizootic of the autumn of 1951 and the winter of 1952 could be considered to have been eliminated in seven months. During this time about 840 farms in 14 counties were affected by the disease, 15,000 cattle and a similar number of pigs to a total value of about 18,000,000 kronor having to be slaughtered.

The Swedish Vetepinary Association

The Veterinary Association of Sweden (founded 1860) functions as a common organisation for the protection of the interest of the veterinary corps to promote the development of the art and science of veterinary medicine and assist the country's veterinary services. To Sweden's Veterinary Association are affiliated the country's veterinary associations, comprising partly country-wide (national) associations and partly local veterinary associations.

The national associations at the present time are :—

The Swedish County Veterinary Officers' Association (1894)
" " Military Veterinary Society (1897)
" " District Veterinary Surgeons' Association (1909)
" " Veterinary Association for Meat and Milk Hygiene (1913)
" Association of Veterinary Meat Inspectors in the Swedish Control Slaughter-houses (1917)
" Swedish Veterinary Association for Animal Hygiene (1933)
" Swedish Younger Veterinary Surgeons' Association (1934)
" Society for Veterinary Medical Research (1936)
" Swedish Association of Chief Veterinary Surgeons (1941)
" " A.I. Veterinarians' Association (1945)
" " Association of Municipal Veterinarians (1946)
" " Slaughter - house Veterinarians' Association (1947)
" Veterinary Association for Swedish Dog Practitioners (1948).

The Swedish Veterinary Association is conducted by a committee of five persons and a delegate assembly, to which the national associations send a varying number of representatives, dependent on the number of members, but totalling about 20. The Swedish Veterinary Association organises, usually in October, an annual three-day veterinary meeting, with lectures and discussions.

The Nordic countries' veterinary organisations co-operate in the production of the scientific publication *Nordisk Veterinärmedicin.*

(To be concluded with Congress Resolutions, etc.)

NOTES AND NEWS

Diary of Events

Sept. 4th.—Meeting of the North Wales Division, B.V.A., at Pwllheli (Crown Hotel), 2 p.m.

Sept. 6th—12th.—Seventy-first Annual General Meeting and Congress of the British Veterinary Association, at Aberdeen.

Sept. 10th.—Annual General Meeting and Dinner of the Royal Dick Alumnus Association at Aberdeen (The Northern Hotel), 6.30 for 7 p.m.

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Aberdeen Congress Tickets

Those members intending to be present at the B.V.A. Congress in Aberdeen but who have not yet returned the form of application for tickets for the various functions, excursions, etc., circulated with our issue of August 1st, are requested to complete and forward it *as a matter of urgency,* to the General Secretary at 36, Gordon Square, London, W.C.1.

Issue of Congress Handbook and Papers

During the course of the past week members should have received copies of the Aberdeen Congress Handbook, with the programme, and the first two of the papers to be presented, namely, "Recent Advances at Weybridge," by Dr. A. W. Stableforth, and "Pig Housing and its Relation to Health," by Mr. D. S. Soutar.

The remaining six papers will be circulated with the issue of *The Veterinary Record* of August 29th. They are as follows: "Veterinary Application of Antibiotics and other Modern Therapeutic Substances," by Dr. S. F. Scheidy; "Some Aspects of Veterinary Dermatology," by Mr. S. Jennings; "Some Aspects of Research Work at the Poultry Research Centre, Edinburgh," by Dr. J. G. Campbell; "Experiments with Identical Twin Calves," by Mr. J. A. Crichton; "Muscular Dystrophy," by Dr. K. L. Blaxter and "Antibiotics in Animal Feeding-stuffs," by Dr. W. S. Gordon and Mr. J. H. Taylor.

Any member who has not received a complete set by Monday, August 31st, can obtain one on application to the General Secretary, at 36, Gordon Square, or, during the period of the Congress, at the office of the General Secretary in the Music Hall, Aberdeen.

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PERSONAL

Birth.—Stirling.—At the Bay of Islands Hospital, New Zealand, on July 15th, 1953, to Evelyn, wife of John Stirling, M.R.C.V.S., a son.

D. Gracie's Success at Dortmund.—D. Gracie, the international hurdler who is a student at the Glasgow University Veterinary School, added to his laurels at Dortmund last week by winning the 400 metres hurdles for Great Britain in the Students' Games. His time was 52·7 seconds.

Death.—We have to record with deep regret the death of Mrs. R. S. Smyth, wife of Mr. Richard Samuel Smyth, M.R.C.V.S., as the result of a collision at the week-end between her car and a bus at Aveton Giffard, Devon. Much sympathy is felt for Mr. Smyth in his tragic bereavement.

Veterinary Student's Honour.—Following the first meeting in Giessen, Germany, of the International Veterinary Students' Union, Mr. Patrick Rhatigan, who is a student in the Veterinary College, Ballsbridge, was elected its first President. Among the aims of the Union are to promote the exchange of ideas on professional problems, to provide summer courses for students and veterinary surgeons, and to facilitate the exchange of students and trainees.—*Dublin Evening Herald.*

Ministry's Veterinary Field Staff.—The following transfer and promotions are announced:—

Mr. G. L. Henshaw, M.R.C.V.S., Veterinary Officer, will be transferred from Worcester to Bridgend on August 17th, 1953.

Mr. E. G. Morris, M.R.C.V.S., Divisional Veterinary Officer, Winchester, has been promoted to "acting" Superintending Veterinary Officer.

Mr. J. J. McLaren, B.Sc., M.R.C.V.S., Veterinary Officer, Welshpool, has been promoted to "acting" Divisional Veterinary Officer.

Mr. H. McEnhill, M.R.C.V.S., Veterinary Officer, Leeds, has been promoted to "acting" Divisional Veterinary Officer.

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R.C.V.S. OBITUARY

Mrs. Pauline M. Brown, M.R.C.V.S.

Mrs. Pauline Margaret Brown, M.R.C.V.S., of Abingdon, whose death we announced, with a tribute from a fellow member of the profession, in our last issue, was a victim of poliomyelitis and passed away on August 7th in the Radclyffe Infirmary, Oxford. With her husband, Mr. Kenneth Brown, she practised as a veterinary surgeon in the Vineyard, Abingdon, and the deepest sympathy of the profession will be extended to him and their three children—the youngest but a few weeks old—in their grievous loss.

A native of Birmingham, Pauline Brown went to Abingdon after graduating from the Royal Veterinary College, London, 1943. Through her work she was well known to farmers, horsemen and horsewomen and owners of small animals throughout North Berkshire. She was a member of the Abingdon branch of the Townswomen's Guild.

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Foot-and-Mouth Disease:

Devon.—Crabdon Farm, Ashreigney, Chulmleigh (Aug. 11).

Anthrax:

Bucks.—Scotsgrove House, Haddenham, Aylesbury (Aug. 7).

Leics.—The Mount, Great Glen, Leicester (Aug. 7); Piggeries, Gartree Road, Stoughton (Aug. 11).

Fowl Pest:

Cornwall.—Higher Cargenwen, Praze, Camborne (Aug. 8); Little Skewes, St. Wenn, Bodmin (Aug. 13).

Essex.—Apiary Cottage, Dunmow (Aug. 12).

Pembroke.—Broom Hill Grove, Llawhaden, Narberth (Aug. 13).

Somerset.—Channel View, Rowberrow, Winscombe (Aug. 10); Winford Manor, Winford, Bristol

Suffolk.—Gladwell's Field, Grimstone End, Fakenham, Bury St. Edmunds (Aug. 13).

Sussex.—Woodbine Poultry Farm, Cross-in-Hand, Heathfield (Aug. 11).

Warwicks.—Newton House Farm, Newton, Rugby (Aug. 12).

Yorks.—Sandall Farm, Allerton, Bradford (Aug. 10).

Swine Fever:

Beds.—22, Station Road, Lower Stondon, Henlow, Beds (Aug. 14).

Cornwall.—Basil Farm, Downgate, Callington, Cornwall; East Roose Farm, Otterham, Launceston (Aug. 15).

Essex.—Gatehouse, Abberton, and Knott's Farm, Assington, Colchester (Aug. 14).

Hants.—Noble's Buildings, Blendworth, Horndean, Portsmouth (Aug. 13).

Herts.—Langley Cross, Langley, Hitchin (Aug. 15).

Leics.—Woodland Farm, Strathern, Melton Mowbray (Aug. 15).

Salop.—Lyneal Lodge, Ellesmere (Aug. 14).

Suffolk.—Cobb's Hall, Great Saxham, Bury St. Edmunds (Aug. 13).

Yorks.—Copperas House, Denholme, Bradford (Aug. 14).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

SWINE FEVER—REGISTERED VACCINATED HERD SCHEME

Sir,—I enclose comment on the Swine Fever—Registered Vaccinated Herd Scheme.—Yours faithfully, David Sillars, Colburn House, St. George's Place, York. *May 8th*, 1953.

Comments

Paragraph 1.—The first people who seek to have their pigs vaccinated in an outbreak scare are the large commercial fatteners and the smallholders and allotment holders. They are in the front line of an outbreak owing to the diversity of their source of supply. They will now be subjected to the additional hazard of a miscellaneous collection of vaccinated and susceptible pigs on their premises. This would render diagnosis even more precarious than at present. What is to be done with them if they seek vaccination similar to that given to the more compact, more self-contained and more strictly regulated pedigree piggery? What will the divisional office tell them if approached? (Paragraph 10.)

Paragraphs 2 and 3.—It is recognised that a regular large supply of crystal violet vaccine is desirable. It is also desirable, as a national asset, that breeding stock should be the first to be protected. The indiscriminate vaccination of the progeny of all vaccinated sows, however, appears to be expensive for those farms which do not breed for show, for export, or for sale as future breeding stock. The numbers likely normally to avail themselves of this scheme are thus narrowed down to those breeders who do not specialise in the commercial production of pig meat. No matter how much wider the term "pig breeder" is made to stretch, it is only likely to include the commercial fattener in circumstances of some emergency. At such a time probably there will be a rush of contractors into the scheme, followed by an equally precipitate contracting out when the scare subsides. This is likely to aggravate the already somewhat parlous state of affairs which can occur during an outbreak.

Paragraph 4.—Why is it so urgent to get young pigs vaccinated before they are 12 weeks old? Is there an undisclosed hazard in delaying vaccination beyond that age? If so, it should be made public, as the supply of vaccine might break down under epidemic conditions.

Paragraphs 5 and 6.—No comment.

Paragraph 7.—Certificates of vaccination for individual pigs will

frequently be required some months after vaccination. This would amount to the veterinary surgeon signing a blank form to be filled in by the breeder at his convenience. It would be more accurate if the record book contained the identity marks of all pigs vaccinated, opposite the veterinary surgeon's signature. This could be produced when required by auctioneer or purchaser and would leave no doubt as to when vaccination would need to be repeated. A certified extract from the vaccination book could then be issued if required.

Paragraph 8.—The above method of certification would not apply to pigs vaccinated by the owner.

Paragraph 9.—Fluctuations in the price of vaccine would, of course, be immediately passed on to the pig breeder. Would notification of charges be sent direct from the divisional office to everyone in the scheme? One month's notice (or the life of the vaccine if improved) might be reasonable. There would be no margin for carrying stocks at a loss.

In conclusion:—

It appears as if the scheme might work quite smoothly in the absence of any premature major outbreak of the disease in markets or large commercial establishments. It is, however, from such sources that outbreaks on a large scale appear to originate. If the primary aim is to prevent major outbreaks, then a more direct method might reveal itself, such as the vaccination of all store pigs exposed for sale in public markets. It is presumed that this is too great a task and that an element of compulsion would be required: that, moreover, our resources do not run to it, that most pigs thus exposed for sale are destined for slaughter as food and that any section of such markets could not be singled out and subjected to regulated vaccination.

It appears, therefore, that we are committed to the scheme and must prepare for the rush when the next outbreak comes along. It may be that the buffering effect of a proportion of vaccinated pigs will prevent outbreaks on the grand scale and that accentuated diagnostic difficulties will be overcome by scientific progress. A widening of the scheme to include commercial herds may evolve naturally, and therein appears the main hope of securing the desired buffering effect which alone can soften the blow of a widespread epidemic. This effect could perhaps be obtained by making the initial contract of 12 months' minimum duration.

. . . . .

Sir,—In order to orientate our financial relationship with the pig breeder, who like other stock-owners has a businesslike arrangement (profit making) with the National Interest, a few simple calculations might be of interest to the profession generally. The existing scale of fees lie between (*a*) an "over the counter" sale of C.V.V. possibly on a cost plus 33⅓ per cent. basis; (*b*) a visit to the premises with a mileage charge of 1s. 6d. per mile. Assuming that the dose dispensed is 10 c.c., then for four pigs:—

(*a*) Sales policy ... ... fee 23s. 8d.
(*b*) Round trip of 10 miles to inject four pigs at 8s. each ... ... fee 47s. 0d.
(*c*) Under the scheme ... ... fee 32s. 6d.

However, the demand for 5 c.c. doses will be roughly 10 times greater than that for 10 c.c. Therefore, for 40 young pigs:—

(*a*) Sales fee ... ... 120s. 0d.
(*b*) Visit and injection ... ... 175s. 0d.
(*c*) Under the scheme ... ... 169s. 6d.

By subtracting the cost of vaccine, car running expenses, time, depreciation of instruments and overheads, one can arrive at an estimate of profit.

On this estimation of fees, two points emerge clearly: (1) The 7s. 6d. turn-out fee is not, nor can it be intended as, a mileage charge, so on interpretation of paragraph (4) all vaccination must be done when in the immediate neighbourhood of pig-breeders' premises. If any other arrangement is necessary (such as a special visit) then, according to the scheme, such arrangement is outside the scheme, and the veterinarian is entitled to charge his normal fee. (2) The scheme should be amended to provide for a special charge for the use of a 10 c.c. dose, since the fees here are too close to the lowest end of the scale, and the operation of injecting sows is a costly one.

If we are to accept the scheme as a result of external pressure, we must be clear as to how we can make it work to the best advantage of the practitioner. It is clearly ludicrous to suggest that a man who has 40 sows worth at least £2,000 cannot afford to pay £16 15s. to safeguard this little fortune in capital and earning capacity of about 100 per cent. It is unfortunate that we can in no ethical way stress the point sufficiently that so small a profession is the guardian of millions of pounds' worth of material.

The N.F.U. at the moment are masters of the situation and they are exploiting this dominance, but it appears to me that the B.V.A. should be congratulated for resisting the pressure from such well-organised and united bodies as the N.F.U. and Ministry of Agriculture.—Yours faithfully, J. Cassells, Black Horse Lane, Ipswich. *August 10th*, 1953.

. . . . .

Sir,—The Supplement (July 14th) received last week makes the most fascinating reading. Oh that I was blessed with the pen of a Gilbert. What material for the libretto of a not-so-comic opera.

The action of the opera revolves round the introduction of a scheme for the vaccination of the swine of the wealthy landowners by the "Workers" of the veterinary profession in return for a mere handful of roubles.

Scene. A *special* meeting of the "Supreme Soviet, B.V.A." called in the *height of the holiday season* to discuss one of the most important schemes ever laid before the profession.

Cast. A note in the programme tells us that 39 members of the cast will not be appearing for reasons unstated—a purge perhaps? Of the 50 stalwarts present there are (by rough calculation) 26 general practitioners, eight small-animal practitioners, five members of the Ministry, four teachers, two research workers, two Army officers, two cattle breeding representatives and an honorary secretary.

Act. 1. First, the decision to go into Committee so that "a *fairly* full report would then appear in the Supplement of *The Veterinary Record* (Workers' Journal)—which would *as far as possible* cover the points to be discussed." *Not a full report?*—surely the proletariat would be most interested to read what world-shattering contributions had been made to the discussion by their elected representatives.

Then the "bombshell" that several "villains of the piece" have been supplying a potentially dangerous product to the "other side" to use for themselves. What an appalling state of affairs! Any mention of disciplinary action?—not a bit of it! This malpractice is to be allowed to continue (but now under the auspices of the Ministry of Agriculture—mark you!). Why not allow these "medicine pedlars" to open shops or start a mail-order business? Highly professional behaviour this.

Act 2. The machinations of the scheme are unfolded. Then to the final act. . . .

Act 3. Who make all the proposals that the scheme be adopted? The 26 "workers' representatives" who will have to do the dirty work?—not likely! Oh no! The teachers and research workers. Some of the practitioners (vile revolutionaries) are for "referring back to divisions," but here the President makes his final speech: "Many divisions would discuss the matter without knowing all the background and complications associated with it." (The fact that the "proletariat" find it quite impossible to get to know about the background and complications does not seem to worry the President one bit . . . It adds to the mystery of the plot.) The fallacy of the "Supplement Method" of gaining information has been pointed out by one of the "workers" in a letter dated August 3rd and signed Waddington. This same member belongs to a division of the "Supreme Soviet, B.V.A," which has had representatives in on the scheme since its very early days, but he apparently is still as much in the dark as the rest of us!

Then to the Grand Finale. The idea to "refer back to divisions" is squashed by the proposal of a noble Professor—seconded by (guess who)—the representative of the "workers' branch" to which Comrade Waddington belongs!

It is almost too good to be true, Mr. Editor. If it wasn't so serious it would keep me happy for months. Oh!—by the way, is the President of the N.F.U. already cast as "The Lord High Executioner"? He will give a fine performance.

I am almost inclined to agree with one of the "critics"—Mr. Lancaster—who as good as suggests that we forget all about it.

"Oblivious to their awful doom
the little victims play."—

Yours faithfully, Roger Massey, 11, Widford Road, Chelmsford, Essex. *August 13th*, 1953.

P.S.—On the Opening Night a collection will be made for the "Repair of equipment and the provision of extra rations and protective clothing for the 'workers'." Black ties—please.

R. M.

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THE R.C.V.S. ANNUAL FEE

Sir,—I view with alarm and concern the increase in the R.C.V.S. annual fee.

How is the National Serviceman, so generously permitted to serve in the *ranks* of the R.A.V.C. at 4s. a day, able to pay a fee of 4 guineas a year?

Rather than forgo almost one month's wages, it might be better to have one's name temporarily removed from the register of the R.C.V.S.—Yours faithfully, D. R. Lane, 30, Studley Road, Luton, Beds. *August 17th*, 1953.